The Pennsylvania State University

The Graduate School

Department of History

CELTIC WARFARE IN IRELAND:

A LOGISTICAL PERSPECTIVE

A Thesis In

History

by

David B. Beougher

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Arts

May 1999

I grant The Pennsylvania State University the nonexclusive right to use this work for the University's own purposes and to make single copies of the work available to the public on a not-for-profit basis if copies are not otherwise available.

Original Signed
David B. Beougher

We approve the thesis of David B. Beougher.

Date of Signature

_Original Signed_____ _____
Benjamin T. Hudson
Associate Professor of History and Medieval Studies
Thesis Advisor

_Original Signed_____ _____
Carol Reardon
Associate Professor of History

_Original Signed_____ _____
Janina Safran
Assistant Professor of History

_Original Signed_____ _____
A. Gregg Roeber
Professor of Early Modern History and Religious Studies
Head of the Department of History

Abstract

The study of warfare in Pre-Norman Ireland has focused almost to exclusion on the political ramifications of campaigns and violent actions. Scholars have avoided detailed studies of the mechanics of violence in this Celtic society due to a paucity of the documentation commonly used by military historians. By combining the study of literary and ecclesiastical sources as well as archaeological evidence with modern United States Army logistical doctrine, the general logistical practices employed by the pre-Norman Irish kings emerges. The study continues on by examining certain critical elements of this practice: specifically the assembly of armies, methods of movement, and the provisioning of the force. After developing a model for Irish logistical practices, this thesis examines Latin and European influences on the Irish from the seventh through the eleventh centuries and their impact in Ireland. This methodology sheds new light on the incredible success of the kingdom of Dál Cais in the late tenth and early eleventh centuries. By refusing to conform to traditional logistical practices, and instead adapting the methods that had proven successful in Wessex and West Francia, Brian Borumha revolutionized warfare in Ireland.

Table of Contents

List of Figures and Illustrations

Figure 1: Map of Ireland

Source: David Hill, *An Atlas of Anglo-Saxon England* (Toronto: University of Toronto Press, 1981)

Introduction

In a recent work entitled *A Military History of Ireland*, T.M. Charles-Edwards, discussing warfare up to 1100 A.D., states "The normal Irish fighting man had a spear and a shield at the beginning of our period and also at the end."[1] The purpose of this thesis is not to challenge his assertion, nor is it to focus on the mechanics of combat. Instead, the objective is to examine the current understanding of warfare and violence in early medieval Ireland from a different perspective – that of the logistician. Logistics are not exciting. What the study of logistics does offer, however, is the ability to build a detailed model of how armies fought. Gaining an appreciation of how the Irish raised an army, moved it, and fed it, allows for a new understanding and a reassessment of the political and social impact of warfare in Ireland.

In an attempt to discover the basic elements of the Irish logistical system, this study will use modern logistical concepts called combat service support battlefield operating systems (i.e. categories).[2] The three specific systems that apply to medieval logistics are: 1. manning the force, 2. moving the force, and 3. sustaining the force[3]. The application of this model to the problem of how the Irish dealt with manning the force, leads to the questions How did the Irish gather an army? and Did the composition of those armies change depending on the time available or the mission? What was the Irish conception of travel as well as the physical dimensions of the available roads and terrain? What assets

---

[1] T.M. Charles Edwards, "Irish Warfare before 1100," in *A Military History of Ireland*, ed. Thomas Bartlett and Keith Jeffery (Cambridge: Cambridge University Press, 1996), page 27.

[2] *Support Operations Course (Phase I): Lesson Book* (Fort Lee: United States Army Logistics Management College, 1993), page i.

[3] There are actually seven systems: Fueling, arming, fixing, moving, manning, sustaining and protecting. Of these, only three: manning, moving and sustaining have a direct correlation in the Medieval world prior to the introduction of gunpowder.

were available to transport supplies and what restrictions might apply? What did the soldiers eat and how was that food supplied? Potentially, the knowledge gained from answering these questions can provide a basis for examining the influence of external agencies on Irish warfare. As conditions changed with, for example, the introduction of new technology or foreign ideas or institutions, did the logistical system in Ireland change, and if so, what impact did the changes have on warfare?

A review of the literature on the military history of pre-Norman Ireland (that is Ireland prior to AD 1170) reveals an almost empty shelf. Setting aside popularizing and inaccurate accounts, the only recent scholarly work on the subject is a collection of essays published entitled *A Military History of Ireland.* Only one essay in that work, "Irish Warfare before 1100" by Charles-Edwards, deals specifically with Celtic Ireland before the coming of the Anglo-Normans in 1169. He relies heavily on the political information found in the annals with the result being more of a political narrative of who attacked whom. Charles-Edwards used this information to develop an interpretation of Irish warfare dominated by dynastic disputes, and thus "The character of war in all periods is determined...by the nature of politics."[4] This focus reveals little about the mechanics of the violence.

The historical sources for this period are one reason why so little work has been done on this topic. The annals, a critical foundation for any study of the period, lack the details necessary for an in-depth look at the specifics of war. They only provide a skeleton outline of the yearly happenings in Ireland. Written by monastic scribes, this information includes obituaries of kings and church leaders, notices of battles and raids, and even

unusual events such as an entry in 911 A.D. that noted "A rainy and dark year. A comet [Haley's Comet] appeared."[5] Until the beginning of the tenth century, the annals were derived from a common source referred to by modern scholars as the 'Chronicle of Ireland.'[6] The *Annals of Ulster* are considered to be the truest representation of the now lost 'chronicle,' and as such, they represent the basic text for the rest of the Irish annals.[7] After the conclusion of the Chronicle of Ireland, other chronicles have an independent importance. The *Annals of Inisfallen* are a compilation of an abbreviated version of the 'Chronicle' and local information from Munster.[8] This text shows a bias towards the southern half of Ireland just as the *Annals of Ulster* show the influence of the Uí Neíll of the north. The *Chronicon Scotorum*, from the midlands, and the *Annals of Loch Cé* both bear a strong resemblance to the *Annals of Ulster* with some deviation, such as a more southerly orientation. While the combination of these documents provides a wealth of data, the creation of a logistical model from these sources would remain incomplete, and most likely heavily flawed, without the support of other sources.

Fortunately, other sources are available to provide useful information to develop a detailed model of military logistics. One source is heroic literature, specifically the stories of the Ulster Cycle. This cycle focuses on the adventures of the men of Ulster and is set sometime in the centuries around the birth of Christ.[9] These tales have been used mainly for their value in understanding the mythology of pre-Christian Ireland; they have

---

[4] Charles-Edwards, page 28.
[5] AU, page 425.
[6] Kathleen Hughes, *Early Christian Ireland: Introduction to the Sources* (Ithaca: Cornell University Press, 1972), page 103.
[7] Ibid., pages 99-103.
[8] Hughes, pages 107-110.
[9] Jeffrey Gantz, *Early Irish Myths and Sagas* (London: Penguin Books, 1981), page 22.

not yet been questioned in an effort to yield details relative to the study of logistics. Monastic scribes began recording these tales possibly as early as the seventh century,[10] but the extant versions come from the eleventh century.[11] While it is highly unlikely that the stories reflect actual men and actual deeds, Alfred Nutt argues that even if the characters were legends, they did not negate the reality of the setting in which they acted.[12] The value of these tales lies not in what they tell us about specific characters such as Conchobar the man and the supposed relations between Ulster and Connacht. For us, the importance is in what their audience would accept as realistic. These tales were entertainment for noble courts, filled with the trained warriors of the time. That audience expected their heroes to act in a manner familiar to them. Cuchulainn used a spear in the same way as the warriors of the tenth century expected. He did not use a bow or participate in cavalry charges, but neither did the nobles of early medieval Ireland. Cattle played a central role in the Ulster Cycle as they did in the annals contemporary to the recording of the Cycle. One can expect that the mundane aspects of the tales had to appear realistic to contemporaries of the scribes who recorded the stories. This group of stories thus has the potential to provide a degree of detail not fully available in the annals.

A final source useful for this study is archaeology. The advances made in this field since the 1960s can potentially provide physical evidence to corroborate information from the written sources. Two important projects for this study are by Raftery and

---

[10] Kenneth H. Jackson, *The Oldest Irish Tradition: A Window on the Iron Age* (Cambridge: Cambridge University Press, 1964), page 52.
[11] Thomas Kinsella, *The Tain* (Oxford: Oxford University Press, 1969), page ix-xi and Jackson, page 52.
[12] Alfred Nutt, *The Critical Study of Gaelic Literature* (New York: Burt Franklin, 1904), pages 1-2, see also Jackson, page 48.

McCormick. Work done by Barry Raftery on the bog roads in Corlea helps in the understanding of the difficulties involved in travel as well as information about road construction.[13] Finbar McCormick examined the faunal remains at several sites around Ireland.[14] His research adds depth to the current understanding of the role of animals both for dairying and for meat. These efforts have significant potential for adding to an understanding of medieval Irish logistics.

Each chapter will ask questions of the sources specific to one of the elements of logistics outlined in this introduction. The progression is intended to increase awareness of logistical considerations as they would have confronted the king who organized the expedition. First he would have to assemble his army, then the army would move toward its objective. For the duration of the operation, the soldiers would have to be fed. With this hypothetical model fleshed out, the chapter on change shows the impact of the Christian Church, the Vikings, and the examples of other medieval kings on how Irish kings supported their war efforts. Such a methodology will hopefully illuminate the complex array of factors involved in the logistical system of the Celtic Irish kingdoms.

---

[13] Barry Raftery, *Trackways through Time: Archaeological Investigations on Irish Bog Roads, 1985-1989* (Rush: Headline Publishing, 1990).

[14] Finbar McCormick, "Dairying and Beef Production in Early Christian Ireland: The Faunal Evidence," in *Landscape Archaeology in Ireland*, ed. Terence Reeves-Smyth and Fred Hammond (Oxford: BAR British Series 116, 1983).

Manning the Force

The beginning of any study on logistics must first determine the composition of the force that must be supported. Did Irish armies have any specific structure? Or were battles and raids chance encounters between wandering bands organized only for the moment? A quick glance at the annals lends credence to the idea that the attacks and violence had form. Most entries begin with the king or kingdom that conducted the attack and, as such, warfare possibly had political implications. If so, then the starting point for examining how kings raised armies begins with the question of why they raised them.

The reasons for raising the army influenced how it was built. While seemingly a simple task, the assembly of a fighting force involves a complex variety of factors. In that, Ireland is no different from any other land. Kings used violence for a multitude of reasons, big and small. Consequently, they had need of flexibility in the composition of their army. From pre-history to the coming of the Normans in the twelfth century, Irish kings conducted violent operations against one another. The types of forces used depended on three basic factors: one, the resources commanded by each leader; two, the length of time that the king had to prepare; and finally, the general political situation. Rarely did kingdoms fight in isolation. Allies were involved in sending support, maintaining neutrality or even by alliance if it suited their purposes. Emerging from this complex mass is the outline of a system for the

Figure 2: An Irish Spearman from the Book of Kells

Source: Francoise Henry, *The Book of Kells* (New York: Alfred A. Knopf, 1974)

manning of armies in Ireland. A great deal of overlap existed within this system but it can serve as the basis for an examination of the function of manning an army in early Ireland.

Can a model of the army assembly be created? In this instance, how does one go about creating a model for understanding the assembly of an army? A model can be borrowed from a contemporary, the Vikings. Viking activity in Ireland holds an important place in that island's history, and their methods of fighting had some similarities. This model lessens the need to examine combat in depth except as it affects logistics. In a study of contemporary Viking warfare, Paddy Griffith constructed a model with four categories: Saga Warfare; Royal Household Action; Going A-Viking; and Royal Army Campaigning.[15] Such a methodology proved useful for him in dividing Viking actions into manageable chunks; adapting his model for Irish warfare yields three general categories: tactics, operations and strategy. The tactical level of Irish fighting corresponds with Griffith's Saga Warfare and Royal Household action, which involved small raids and scouting expeditions, house burning, and skirmishing. Operational warfare includes Going A-Viking and, slightly Royal Army Campaigning, consisting of traditional Viking plundering raids as well as systematic harrying. Royal Army Campaigning corresponds to strategic operations. Viking campaigning involved land-based armies with the intent of capturing and holding territory. For example, the Great Army that ravaged England, led to a permanent Scandinavian settlement, and political entity in Britain.

---

[15] Paddy Griffith, *The Viking Art of War* (London: Greenhill Books, 1995), pages 105-126. He includes a wonderfully simple chart summarizing the chapter on page 126.

Each general category has its own vocabulary in the written sources. For example, the terms sligad and tinol, along with the multitude of spellings of these words, occur in reference to larger operations involving the call up of the non-permanent forces of the kingdom. Sligad translates as 'hosting,' and tinol denotes much larger gatherings or assemblies. Sligad involved the levying of a king's own demesne, while tinol signifies the assembly of several sligads together with foreign allies. These terms provide a framework within which to look at the assembly of forces, but one must be aware of the overlap between them.

D.A. Binchy notes "as a result of the wars with the Norsemen and the subsequent Norse settlements, much of the older pattern of society mirrored in the law-tracts had been drastically altered, including the traditional pattern of kingship."[16] As the Irish political landscape changed, so too did the language describing it. The annals were written in a time of change both politically and linguistically. The consolidation efforts of the provincial kings slowly swallowed up the minor kings and kingdoms. The tuaths, or small kingdoms, did not disappear, but rather became less important as the provincial kings consolidated their power and expressed their authority more effectively. Such efforts find representation in works such as the *Lebor na Cert,* an eleventh century document that outlines the rights to tribute of the provincial kings and their relationship to the tuath kings as well as the high-king.[17] At the same time, several works explaining various new terms and defining older words were written. *Cormac's Glossary* was composed in the tenth century and the *Calendar of Óengus (the Culdee)* was written in

[16] D.A. Binchy, *Celtic and Anglo-Saxon Kingship* (Oxford: Clarendon Press, 1970), page 33. See also D.A. Binchy, "The Passing of the Old Order" *in The Impact of the Scandinavian Invasions on the Celtic-speaking Peoples c. 800-1100AD* (Dublin: Proceedings of the International Congress of Celtic Studies).

the ninth, with notes from the eleventh century.[18] This linguistic transition from Old Irish to Middle Irish resulted in the occasional use of terms, like sligad or tinol, in a sense that does not exactly match the way in which this work defines them. In most cases, it is the context, not the specific word used that matters for this study.

Time influenced the mustering of forces. The length of time necessary to gather troops not only affected the planning that confronted any king who needed a sizable force, but also limited his ability to react quickly to the discovery of a hostile incursion. Planning a campaign involved different factors from responding to a surprise attack. Employing the threefold model, the time conditions separate into tactical, operational and strategic requirements. The tactical level is the ability to influence events close at hand. Local and limited in nature, such operations leave neither time for rounding up support from distant allies nor the opportunity for mobilization of unprepared troops.

Operational concerns involve activity within the local theater e.g. for the provincial levies of Munster (for a king of Munster) that would include southern Ireland: Munster, possibly parts of southern Connacht, and Leinster. For minor kings, this would involve intertribal warfare and raiding the neighbors' cattle, an Irish specialty. While of note in the region where the action took place, the impact on the whole of Ireland would be far less. For example, the Southeastern *Fragmentary Annals of Ireland* concur with the *Annals of Ulster* for the year 855 recounting "A raid by Aed son of Niall to plunder Ulaid."[19] Looking to the Southwest and the annals of events in Munster this operation

---

[17] Myles Dillon, ed., *Lebor na Cert: The Book of Rights* (Dublin: Irish Texts Society, 1962), page ix.
[18] Whitley Stokes, *Three Irish Glossaries* (London: Williams and Norgate, 1862). In his introduction he expounds at length on the probably origin dates and linguistic clues for each of the three works.
[19] Joan Radnor, ed., *Fragmentary Annals of Ireland* (Dublin: Dublin Institute for Advanced Studies, 1978), pages 98-99. The *Annals of Ulster* give this raid as occurring in 854.

finds no mention.[20] Such an event certainly affected the lives of those areas involved as well as adjacent regions. Comparison with records from a locale more removed from the action finds that the raid did not have strategic consequences for the rest of the island. Such expeditions fall neatly into the concept of an operational level of military activity in Ireland. The limited nature of their impact lessens their influence on the strategic situation of the various kingdoms.

Those operations which could potentially alter the political situation of the island as a whole were of strategic concern. An alliance between Máelmórda, king of Leinster, and the Viking kingdoms of Dublin, Orkney and Lochlann (Norway), challenged Brian Bóru's claims to overlordship of Ireland.[21] The resulting battle at Clontarf in 1014 A.D. led to a period of instability as rival claimants to the high-kingship fought to establish control. Another example is the alliance between Brian Bóru and the Church of Armagh. Armagh was the most powerful church in Ireland after the ninth century and it maintained an alliance with the Uí Neíll high-kings. When Brian recognized the primacy of Armagh, and was in turn recognized as emperor, Armagh shifted its support from the Uí Neíll dynasties to the Dál Cassian king. Such an alteration in the balance of power gave Brian support bases and resources to campaign in the north of Ireland, a reality previously unavailable to rulers from the southern half of the island.

The conduct of a hosting by one king against another might temporarily influence the political situation between the two kingdoms but rarely did such operations have any permanent effect. These acts might bring about limited political gains such as the

---

[20] *The Annals of Inisfallen*, Translated by Seán Mac Airt (Dublin: Dublin Institute for Advanced Studies, 1951), pages 130-131, hereafter referred to as AI.

submission of one king to another. These capitulations lasted only as long as the victor could enforce them. Northern sources indicate that in 858 the high-king Máel Sechnaill I plundered Munster, and then took the hostages of most of the province,[22] but the *Annals of Inisfallen* record "A hosting by Mael Sechnaill against Mumu."[23] The temporal nature of the submission of some elements from Munster to the Uí Neíll appears in the entries for the next year when the men of Munster under Cerball, conduct their own 'sluagud' into Uí Neíll lands.[24] Rarely did the actions of a slugad result in an overwhelmingly decisive blow for their enemy.

Strategic concerns involved the entire island and long term political dynamics. A bid for the high-kingship, or active efforts to destabilize a rival provincial kingdom serve as examples. Such grand designs normally involved far more than the resources one king could command, so often these efforts included the recruitment of allies and coordination among provincial kings. For example, in 1002 A. D. the Connachta and Southern Uí Neíll coordinated their efforts by building a barrier across the Shannon River in an attempt to minimize the rising power of Munster by denying the use of that waterway to Brian Bóru. In another example, providing military aid by a provincial king to a minor kingdom within another province might weaken an opposing provincial king. John Kelleher argued quite convincingly that this is exactly what the Uí Neíll began to do in the ninth century, assisting the Dál Cais in an attempt to keep Munster disunited and

---

[21] *Annals of Ulster*, Translated by William M. Hennessy (Dublin: Her Majesty's Stationary Office, 1887), pages 532-535, hereafter referred to as AU.
[22] AU, page 367-369.
[23] AI, 132-133. The translation hosting refers to the term 'Sloged'.
[24] AI, 133. Amusingly, this entry finds no equivalent in the AU.

weak.[25] According to Kelleher, the Uí Neíll kings intended to weaken the Éoganacht kings of Munster by inciting and enabling dissension within Leth Muig. In order to do so, the Uí Neíll gave military aid and support to small kingdoms like the Dál Cais. While the Éoganacht kings dealt with the threat posed by such dissidents, they were unable to consolidate their authority and challenge the northern kings. Such activities affected all of Ireland, shaping the political dynamics of the island as a whole.

Before going into too much detail, we must turn to the fundamental element that formed the foundation for Irish armies before the coming of the Normans. Composition of armies began with the household. The household troops were the permanent retainers of the king, who served as a bodyguard in addition to other tasks such as sentry duty or lookouts. Others patrolled the borders to prevent small-scale incursions by the neighbors as well as to provide early warning of larger raids. These warriors might even harry the raiders to slow them down while the king called up his levies to defend the kingdom. The more experienced fighters might conduct forays of their own that could provide intelligence regarding the state of affairs in neighboring lands and details of terrain and routes.

The Story of Mac Datho's Pig, a competition between the warriors of Ulster and Connacht to determine who was the greatest among them, could serve as a job description for these household troops. In one episode, Cét, an Ulster hero, recounted the story of his encounter with the Connacht hero Loegairi when they met while both patrolled the borderland. Cét bragged, "Mutually we met at it [the borderland]. You left

---

[25] John V. Kelleher, "The Rise of the Dál Cais," in *North Munster Studies*, ed. Etienne Rynne (Limerick: The Thomond Archaeological Society, 1967), pages 230-241.

the wheel, the chariot and the horse, and you escaped with my spear through you."[26] The household warriors also conducted small-scale raids, sometimes retaliatory. Again, *The Story of Mac Datho's Pig* tells of Cét and one of his encounters. In it, Cet recounts the blinding of Eógan mac Durthacht:

> 'What Place did you see me?' said Eogan.
> 'At the door of your house while driving off your cows.' [said Cet]...
> 'You came along raising the alarm.'
> 'You threw your spear so that it stuck out of my shield.'
> 'I threw your spear to you so that it went through your head and it carried off your eye.'[27]

Cét's bravado provided the formula that leads to a witty turn at the conclusion of the tale, but each time he defended his right to carve the pig (the honor given to the greatest warrior) he shed further light on what was expected of the king's household. Most of the events reflect small-scale operations designed to test the readiness of bordering regions. Each required familiarity with the local terrain that only full time service could provide.

The need existed for a constant stream of replacements. Each encounter between the warriors of Ulster and Connacht left men crippled or dead. This attrition necessitated a large pool of potential recruits. Where did they come from? The numerical picture begins with the household troops mentioned in the various tales tied to the epic *Táin Bó Cuáilnge* (*the Cattle Raid of Cooley*). In these tales, King Aillil and Queen Medb attempt to build the forces required for their planned incursion into Ulster to steal the Great Brown Bull of Cooley. To do so, they sent messengers to the various kings of the

---

[26] Ruth P. Lehmann and W.P. Lehmann, *An Introduction to Old Irish* (New York: The Modern Language Association of America, 1975; paperback reprint, 1996), page 73. Her transcription reads "8. Imma tarraid dun indi. 9. Fo racbais in roth ocus in carpat ocus na heocho, ocus at rulais fein ocus gai truit."

[27] Lehmann. The transcription reads "6. 'Cairm indom acca?' ol Eogan. 7. I ndorus do thige oc tabairt tanae bo huait...9. Tanacais-<s>iu fon egim. 10. Ro lecis gai form-sa co rrabae asmo sciath. 11. Do llecim-se duit-siu in ngai cetna co-lluid tret chenn ocus co mbert do suil asdo chiunn." Page 81.

kingdoms of Connacht. Many of the tales contain descriptions of the courts and households of the kings to whom Aillel sends messengers, with a description of the kings' retinues, especially young nobles sent there for fosterage, a common practice at the time. Specific numbers come from two tales, the *Táin Bó Dartaid* (*the Cattle Raid of Dartad*) and the *Táin Bó Fraich* (*the Cattle Raid of Fraech*), of the fostering of 40 and 50 princes respectively.[28] These boys ranged in age from around seven to fourteen, which suggests between five and ten in any particular age group. While some would return to their families at the completion of their training, others would remain in the permanent service of the king. To expect an equal number of adult warriors at the court as boys in training seems not only reasonable but necessary. These tales give the impression that a king's household could include around 100 permanent male members, roughly divided between youths in training and seasoned warriors. Often, the king had need of more warriors than just his household.

A larger body of fighters available to the king was the entire adult male population of his kingdom. Each man owed military service when called upon.[29] Usually this service was for a limited time, normally 40 days. These men - not the skilled, professional warriors of the king's household - were the farmers, herdsmen craftsmen and laborers who nurtured the resources of the kingdom, somewhat akin to the modern Army Reserve or National Guard. While this levy force could prove a significant addition in manpower to the ranks of the army, a king had to balance this military advantage with the disadvantage of taking the labor force away from work essential to the agricultural and

---

[28]A.H. Leahy, ed., *Heroic Romances of Ireland* (London: David Nutt, 1906), page 7 and page 73.

economic needs of the realm. This call up, however, appears to be about the minimum force required before conducting an offensive operation outside of the tribal lands.

In making the decision to mobilize his people for military action, the king chose a time when taking the men away from their responsibilities would have a minimal impact. The more time they spent on campaign, the fewer fields they planted, the fewer repairs to buildings and fences they accomplished, and the herds received less attention. To call a hosting of this magnitude involved more than just the personal whims of a ruler. A well-planned expedition might catch an enemy unprepared, and by adding the levies to his household troops, the king could achieve a higher degree of success than by using merely his permanent retainers. Overwhelming his opponent enabled the king to secure hostages in return for the cessation of hostilities. Such a peace meant tribute as well as access to resources previously not under his control. The king had to be careful however, for if he ranged too far afield he would encounter the levies of multiple other kings, placing him at a significant disadvantage if brought to battle. Moving too slowly would limit or even negate the advantage of surprise and the early discovery of the invaders might lead to a defensive levy which might catch the invading army and bring it to battle. Cenél Conaill ran into just such a problem in Ulster in 854 A.D. when, according to the *Annals of Ulster,* "a preying expedition by Aedh son of Niall to the Ulaid, when he lost Connecan son of Colman, and Flaithbertach son of Niall, and many more besides."[30] Instead of taking a prey of cattle, these raiders ended up taking away only their own dead. Even

---

[29] Seán Duffy, *Ireland in the Middle Ages* (New York: St. Martin's Press, 1997), page 21.
[30] AU, page 365.

with the additional numbers provided by using a levied host, the results of a mission were never preordained.

The assembling of a levy could extend the call for fighters to subordinate kings. The chronology and administration of this levy was simple and consistent. In a brief sketch, the process had two components: announcement of the intended campaign and the actual assembly. Messengers traveled throughout the kingdom announcing the call up, the location of the assembly, and the time of arrival there. Relatively quickly after the subordinate nobles received notice, they dispatched their own messengers to alert their subjects. Critical to the muster was the inclusion of a specific day for the men to arrive at the muster site. Some men received notice early on in the process, others heard the news at the end of the messenger's circuit. By giving notice of a fixed date for the muster, the king avoided the piecemeal arrival of his warriors. If men arrived piecemeal over a two week period, they would have to be fed and housed for much longer than just the campaign for which the king had called them. Worse, those who had arrived early might begin settling in and make getting started far more difficult than if everyone arrived on the same day, stayed one night, and moved out the next day. Also, men who arrived early would complete their six week obligation too soon. Once the troops assembled the king was responsible for providing food for the duration of their service. Irish kings lacked the means and opportunity to purchase great amounts of supplies. They had only the produce and herds of their own domain to provide for their troops once gathered together. Each day that the army remained stationary meant the consumption of a day's rations with no tangible results. If they remained in his territory for any period of time it would deplete the local crops and herds of that region. The effect of billeting, or soldiers

relying on the local population to feed and house them, can be seen in the eleventh century record, *Cogadh Gaedhel re Gallaibh*:

> a soldier in every house, so that none of the men of Erinn had power to give even the milk of his cow, nor as much as the clutch of eggs of one hen in succour or in kindness to an aged man...And though there were but one milk-giving cow in the house, she durst not be milked for an infant of one night, nor for a sick person, but must be kept for the...soldier.[31]

While the references are specifically to the Viking practice of billeting, they give a picture of the hardship that quickly resulted from an army remaining too long in one place. Far better to move quickly to the enemy's lands: the campaign would come to an end that much more quickly, and foraging affected the enemy's lands not those of the king.

An episode between Brian Boru, then over-king of Munster, and the high-king Máel Sechlainn II in 1002 A.D. suggests a timeframe for the assembly of an army. Brian had assembled a great hosting of the men of Leth Mogha and set out for Tara to challenge the high-king. Máel Sechlainn requested a month's delay to rally his forces. The month proved sufficient for Maelsechlainn to send two requests for assistance to his northern relatives, one which he personally led. The men of Ailech assembled but refused to support the king of Tara against Brian.[32] But to call on a subordinate king for troops was the right of an over-king, and to face the Dálcassians with any hope for success, Maelsechlainn needed more than just the warriors of his personal household. The important issue in this example is not that the men of Ailech failed to come when called, but that these events enable the construction of a timeline for the building of a provincial

army. Brian granted Máel Sechnaill one month to field an army to contend for the throne. Both kings give every indication that they felt this a reasonable amount. Within the allotted period Máel Sechnaill managed to send messengers, receive a reply, and then send a second delegation to his subordinate kings. Also within this span, the king of Ailech called the host of the northern Uí Neíll together in preparation for possible action. Unable to command the allegiance of his subordinates, Máel Sechnaill submitted to Brian instead of facing him in battle. The thirty days granted him by the king of Munster had been sufficient to attempt to rally the men of his province.

As kings planned large operations against their foes, they took several months and even years to build political alliances and attract fighters to their standard. Allying with other small kings or a provincial king calling upon those owing him loyalty provided a larger levy of a quality roughly equivalent to the sligad call up. The call for foreign allies proved equally important. Using messengers sent to specific areas, kings invited adventurers, friends, mercenaries and anyone with a grudge against the enemy to participate for booty, a fee, or any other of a variety of reasons. Fergus, a political exile and potential contender for the throne of Ulster, and his men joined Aillel and Medb as political dissidents.[33] They fought to reclaim what they saw as their rightful place in the society of their homeland. To bring together a group of such diverse backgrounds, took

---

[31] *Cogadh Gaedhil re Gallaibh*, Translated by James Henthorn Todd (London: Longmans, Green, Reader, and Dyer, 1867), pages 48-51.
[32] CGG, pages 118-131.
[33] The tale *the Exile of the Sons of Uisliu* gives the details of how Fergus and his Ulstermen came to Connacht. The tale, How *Conchobar was Begotten, and How He Took the Kingship of Ulster*, explains how Fergus lost his crown to Conchobar. Both can be found in Thomas Kinsella, *The Tain* (Oxford: Oxford University Press, 1969), pages 8-20 and 3-6 respectively. Hereafter *The Tain* will be referred to as TBC.

not only time, but a significant degree of planning on the part of the king and Queen of Connacht.

The preparations of Medb and Ailill for their invasion of Ulster, depicted in the epic *Táin Bó Cuailnge*, provide insight into the arrangements necessary to gather an army of the magnitude required to attack a distant province and overcome it. According to the *Táin*:

> Ailill and Medb assembled a great army in Connacht, and they sent word also to the other three provinces. Ailill sent out messengers as well to his brothers...And he sent to Conchobor's son, Cormac Connlongas, the leader of the Ulster Exiles, and his troop...Soon they all came to Cruachan Ai.[34]

As they accumulated forces, the rulers of Connacht enlisted the aid of every potential ally they could. The story recounts the levies of four provinces joining the Connachtment as well as the armies of Ailill's brothers and even a group of political dissidents from Ulster. The combination of all of these forces gave the leaders of Connacht a significant edge in manpower over Ulster. Put bluntly, Medb and Ailill had isolated Ulster strategically and raised a seemingly overwhelming military force for their invasion. They did not manage this feat overnight.

The Rémscála[35] provide even more information regarding Medb and Ailill's build-up of forces. These 'pre-tales' consist of a number of shorter works dealing with the activities of the Connacht leaders before the actual consolidation of their forces for the raid. These stories, which include several other 'Tains,' illuminate the efforts of Medb and Ailill to gather support by using negotiations, bribery, and coercion to get other kings and leaders to provide a variety of different forms of assistance. In the *Táin Bó*

---

[34] TBC, pg 58.

Regamon, the household warriors of Medb took by force the supplies they wanted from the smaller kingdom.[36] Taking a different tack, in the *Táin Bó Fraich*, messengers from Connacht negotiated with king Froech, leading to his proclamation that:

> -By my soul I am sworn,
> -That when cattle from Cualgne by force shall be torn
> -To King Ailill and Maev on my faith as their guest
> -I must ride with those cattle for war to the west![37]

Here, their efforts yielded fruit not only in provisions but also in a willing ally. Similarly, King Eocho of Clew answered a summons from Ailill in *Táin Bó Dartaid*, agreeing to provide support for the operation.[38] These tales lend credence to Ewa Sadowska's assertion that "It appears to have been a carefully premeditated long-term objective. In order to realize it, the Connacht leaders were gradually strengthening their military forces by securing allies and food provisions."[39] The sending of messengers, awaiting responses, conducting negotiations and finally bringing the whole host together necessitated extensive planning. A great hosting, or tinol, did not happen in a period of a few short weeks. Rather it required several months of careful preparation. The response of Ulster provides similar insights.

The response of the Ulster king Conchobar to the failed attack by Connacht was the raising of a large army of his own. *Cath Ruis na Ríg for Bóinn* began with the king's counselor, Cathbad, arguing against an immediate reprisal. He encouraged the king to wait at least two months, allowing him time to gather support and to accumulate

---

[35] Rémscála is the term normally applied to those stories within the Ulster cycle that detail events leading up to the Táin Bó Cuailgne.
[36] Leahy, pg 97.
[37] Leahy, pg 59.
[38] Leahy, pg 75-77.

provisions. The storyteller noted, "And there were sent then intelligences and messengers from him to his absent friends, through the Gallic lands, to the foreignlands of the foreigners. It is then that there was made a gathering and muster by them too."[40] Conchobar called for aid from a wide range of external sources. He intended to deal Connacht a serious blow, possibly in an attempt to end the struggle for dominance over Ireland once and for all. This required far more resources than a provincial king could command on his own. Meeting in battle with roughly equal force did not bode well for success. Instead, as had Medb and Ailill, Conchobar took months to bring together warriors from far away in order to gain a strategic edge in the upcoming fray.

The annals lend credibility to the information gleaned from the Ulster Cycle stories, showing that literature reflects a reality that the intended audience would accept. The heroes in the *Táin* use spears and shields in a manner similar to that of the Irish warriors recorded in historical documents. The same can be said for their preparations. The *Annals of Loch Cé* provide an excellent example of a Tinol in the first year covered by those records, 1014 A.D. Brian Boru had beseiged Dublin until Christmas. When his supplies ran out, he lifted the siege and retired. The high-king returned to Dublin in late April and met in battle an army gathered together over the intervening four months by Máelmórda and the Dublin Vikings. The *Annals of Loch Cé* describe the "Tionel tanic ann."[41] Their messengers had brought support from the Orkneys, Galloway, the Isle of

---

[39] Ewa Sadowska, "The Military Nature of the Raiding Campaign in Táin Bó Cuailnge," in *Ulidia*, ed. J.P. Mallory and Gerard Stockman (Belfast: December Publications, 1994), page 246.

[40] *Cath Ruis Na Rig for Bóinn*, Translated by Edmund Hogan (Dublin: Hodges Figgis & Co., 1892), page 15.

[41] "Hennessy translated this phrase as "assemblage that came thither." All of the annalistic information in this paragraph came from the *Annals of Loch Cé*, Translated by William Hennessy (London: Longman & Co., 18871), pages 4-5.

Mann, and even as far away as Norway and Flanders. So many men arrived that they fielded an army six times as large as the garrison that remained in Dublin. Interestingly, the annals call the men of Innsi-Gall a 'sloig' (a singular form) and the men of Brodar as a 'sluagoib' (a dative, plural form of sligad). Both of these hosts formed only a portion of the larger tinol that would face Brian's army in battle. Four months proved adequate in this instance for the word to get out and for allies to rally to the standard.

Even this cursory examination of the assembly of Irish armies sheds new light on the subject. Irish kings had a multitude of options available to them when it came to fighting. No real standing armies or Irish hordes traipsed back and forth across the countryside. Kings possessed the forces for limited missions ready at hand but had to build their army if they planned anything more extensive than a small raid of the neighbor's cows. The king made each decision after considering a wide variety of factors. Calling up a levy of freedmen had an economic impact. Looking to foreign lands for allies involved time. The process was complicated and shows a high degree of sophistication not always appreciated.

Moving The Force

Once a king gathers his army together, he must move it to some distant point to accomplish its mission. Colm O'Lochlainn aptly identified the significant difficulty for students of Irish history in this arena when he stated that:

> No student of Irish history can fail to be struck by the way in which the military expeditions of ancient kings and the missionary wanderings of the founders of the Irish Church are recorded without any mention of the first essential for transport - the road.[42]

O'Lochlainn's observation highlights the critical issue concerning early Irish roads. No one questions the fact that people traveled throughout Ireland. The annals are filled with raids, kings going on circuits, and churchmen wandering about the country. However, O'Lochlainn indicates, the records reveal little about the way in which travelers moved about. Does the omission of references to roads imply a network that covered Ireland from end to end? Does it hint that the Celtic islanders conceived of roads in a different way from those who had experienced Roman influence? Do the roads really matter at all? To understand early medieval Irish attitudes toward travel, one must look to ancient times as a starting point.

In Irish pre-history, the modern perception of roads, heavily influenced as they are by Roman thought and perspective, have no place. The great Roman roads, created by a central government intent on ensuring its ability to control and communicate with the far off provinces of the empire, left indelible marks on the countryside through which they passed. Overbuilt and intended to last, these structures, and structures they were, linked points of importance without regard to the need for landmarks or navigation. A Roman

courier, general, or merchant needed to know little more than which road went to his destination and then follow that line. The Peutinger Table, a Roman map, showed roads that connected cities while practically ignoring the accuracy of compass directions.[43] What mattered was the line that connected the points, not the relative position of those points. The roads were the objects that facilitated travel. Very few modern people travel outside of the paths marked by white and yellow lines. Modern maps are a series of named lines, Interstate 80, State Route 3, etc. This Roman influence stopped in Britain. Roman engineers and Roman road construction never made it to Ireland, yet the Irish sources frequently mention roads. Areas not touched by the Romans could not be influenced by their perceptions, attitudes and actions. In Ireland, we are not dealing with Roman roads, but a markedly different conception of travel. Can pre-Christian Ireland offer clues for an understanding of this difference? The search for understanding begins in studies of pre-historic Britain.

In *The Old Straight Track,* Alfred Watkins argues that the ancient Britons had developed a series of markers, both natural and man-made, that formed linear tracks of significant distances when connected. He argues that "It would be an absurdity to assume that early man did this without some practical end in view...the provision of clearly defined tracks or roads."[44] The critical element in this conception of the road was the reference point, not the tracks that connected them. Many paths could exist simultaneously on the same route. Each trail represented the choice made by someone

---

[42] Colm O'Lochlainn, "Roadways in Ancient Ireland," in *Feil-sgribhinn Eoin Mhic Neill: Essays and Studies Presented to Professor Eoin Mac Neill*, ed. John Ryan (Dublin: At the Sign of the Three Candles, 1940), page 465.

[43] Caroline A.J. Skeel, *Travel in the First Century After Christ* (Cambridge: Cambridge University Press, 1901), page 26.

about how he would traverse the distance between two reference points. The route was bounded only by the traveler's need to see the markers for orientation. As time progressed, the tracks themselves could easily shift and change due to a variety of factors, typically weather related, but the reference points remained the focus of the system. Watkins' extensive field research led him to conclude that "the old tracks were not suddenly abandoned, but divergences were made...to avoid a wet bottom, again to get round a rocky climb. New tracks were made...based on the old straight track, but constantly getting away from it, and again back to it."[45]

Travelers in Ireland found much less hospitable terrain from that in Watkins' study. Rivers, bogs and rough terrain abound, making a straight path difficult indeed. Typically, many people made the same choices in how to negotiate the terrain. The worn footpaths thus created coincided with the use of the route. The next time the traveler came by, the path quite possibly might have shifted, but the landmarks that marked the road remained.

No one has yet attempted to plot the ways of Ireland in a manner similar to that of Watkins. Still, archaeological and literary sources in Ireland bolster the claim that the Irish saw the road not as an object in and of itself but rather as a series of segments marked by prominent terrain features or visual cues. To avoid confusion, this paper will adopt the terminology calling this manner of looking at roads a way or route, differentiating it from the paths worn by the feet of passers by.

Archaeological excavations and discoveries also give promise of providing the means for such a survey in the near future. Catalogs of monuments, from the dolmans (standing

---

[44] Alfred Watkins, *The Old Straight Track*, 4th ed. (London: Methuen & Co. Ltd., 1948), page 34.
[45] Watkins, pg 211.

stones) and portal and passage grave sites located throughout the island, as well as unique natural and semi-natural structures that are more frequently coming to the attention of scholars allow for some degree of analysis. These landmarks provide physical evidence for the idea that the pre-historic Irish road bore a great deal of similarity to that of Britain. While the terrain in Ireland certainly proved less hospitable to the establishment of straight tracks than the relatively flat plains of southern England, the underlying concern about how to get from one location to another remains. Watkins' theory of landmarks, both natural and man-made, easily makes the jump from England to Ireland.

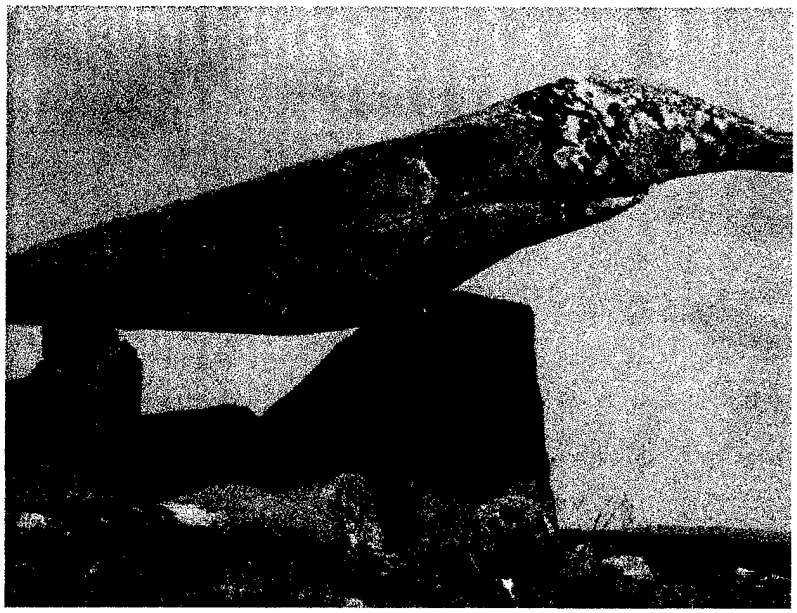


Figure 3: Dolman at Kilcooney, from the 3rd millenium B.C.
Source: Peter Harbison, Homan Potterton, and Jeanne Sheeny, *Irish Art and Architecture* (London: Thames and Hudson, 1978)

Recent scholarship has suggested the existence of a possible link between the monoliths found in the British and Irish countrysides. The henge monuments of Britain stand as a testament to the culture of the ancient British peoples. Similar monuments have been found in Ireland. D.M. Waterman argued that the layout of Navan Fort bore a

striking resemblance to that of Stonehenge and Woodhenge.[46] Watkins had studied Stonehenge and declared it a hub for a large number of tracks which radiated from the center of the monolith to markers visible in the distance. Interestingly, in discussing the link between Navan and several nearby monuments within sight of the central fort, Waterman noted that, "The term 'complex' is used for the group to suggest that there may have been a relationship between the sites (and finds), the position and function of one perhaps influencing the position and function of another."[47] He fails to pursue this theory any further, however. His observation seems even more striking when looking at another 'complex' just southeast of Navan – Tara.

Figure 4: Stone circle from western Cork

Source: Jacqueline O'Brien and Peter Harbison, *Ancient Ireland From Prehistory to the Middle Ages* (New York: Oxford University Press, 1996)

Traditionally, Tara served as the ancient center of power in Ireland. R.A. Macalister described "its wonderful prospect, which...is limited only by the horizon. For so low a hill...the extent of country which it commands is extraordinary."[48] Not only did the site give occupants a wonderful view, it served as a beacon for those traveling to it. Tara's

[46] Dudley M. Waterman, *Excavations at Navan Fort 1961-71* (Belfast: The Stationary Office, 1997), pages 219-220.
[47] Waterman, pg 3.
[48] R.A.S. Macalister, *Tara: A Pagan Sanctuary of Ancient Ireland* (New York: Charles Scribner's Sons, 1931), page 3.

location in the center of the plain called Mag Breg serves as a suitable location for a critical landmark. The monuments that surround Tara, both nearby as well as scattered at the edges of the horizon could certainly have satisfied the role of route markers. Curiously enough, many sites that have been plowed over or otherwise have disappeared bear striking similarities to markers mentioned by Watkins. The Mound of the Druids, of Find, of Creidne and several others were located at various points around Tara but no longer can be found.[49] Watkins had noted the use of the tumulus, a burial mound or ceremonial grave, as common waypoints in the ancient

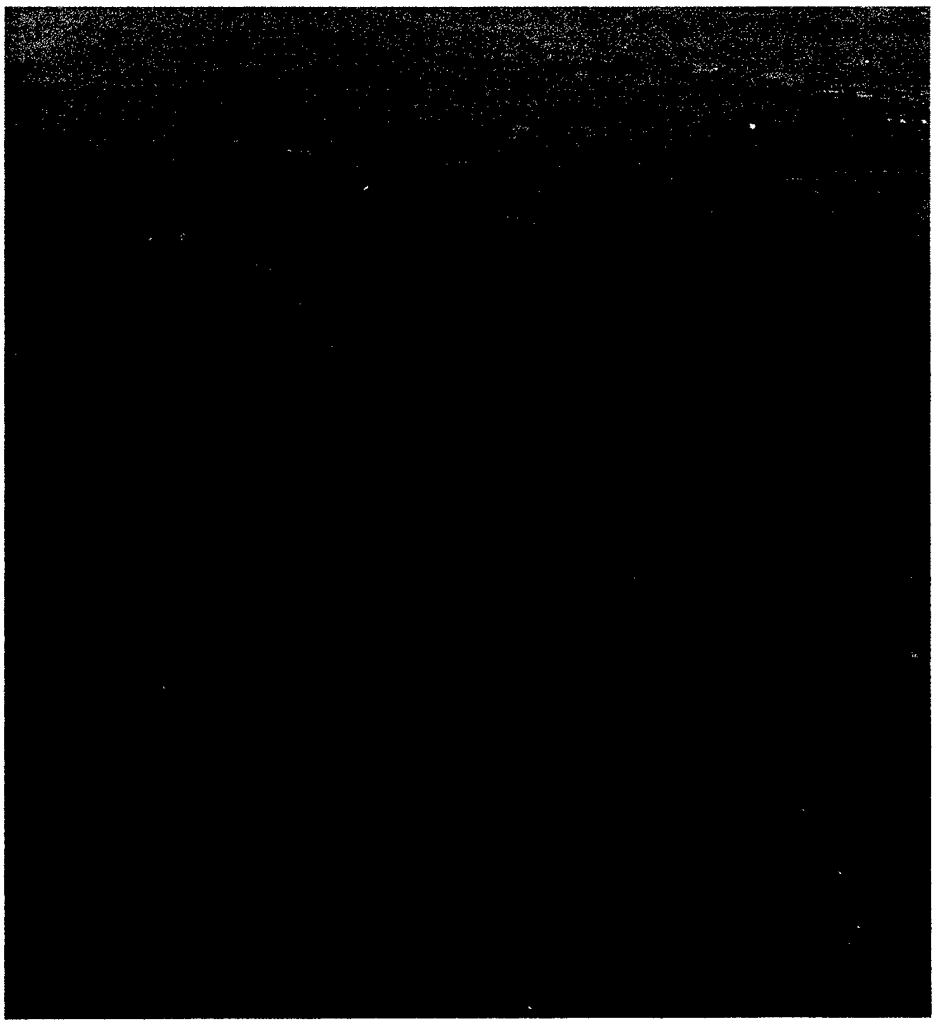


Figure 5: Tara

Source: Jacqueline O'Brien and Peter Harbison, *Ancient Ireland from Prehistory to the Middle Ages* (New York: Oxford University Press, 1996)

British system.[50] Since the Irish mounds no longer exist, the question of whether they served as landmarks for travelers must remain unanswered, but the implication is strong.

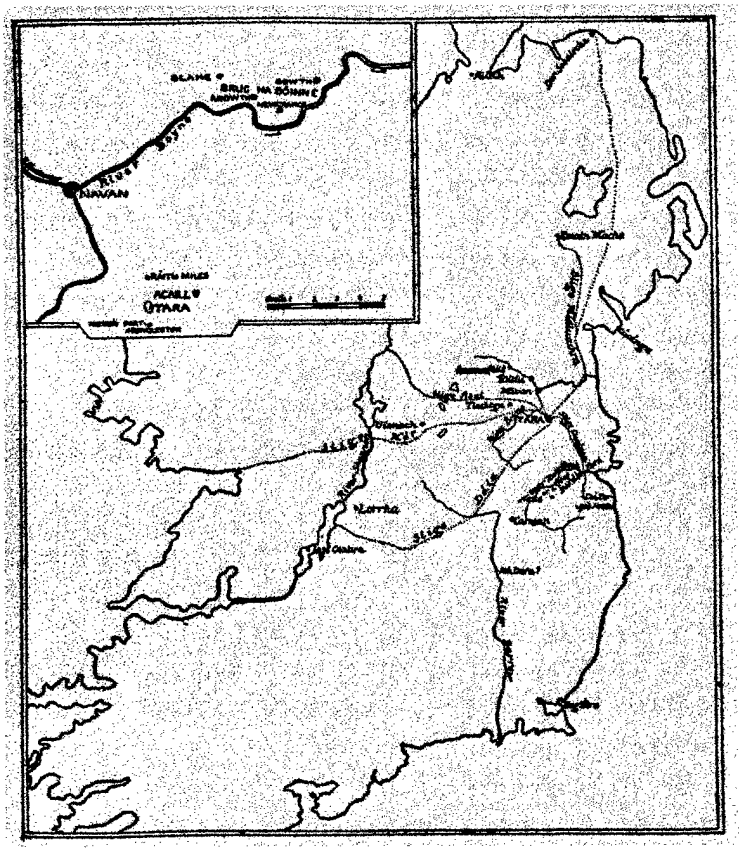


Figure 6: Macalister's Map of the Great Slighe

Source: R.A.S. Macalister, *Tara: A Pagan Sanctuary of Ancient Ireland* (New York: Charles Scribner's Sons, 1931)

O'Lochlainn's work gives the impression that the five 'Great Roads' of Ireland, the Slighe Asal, Mor, Dala, Cualann and Midluachra, all begin at Tara. Macalister's map[51] shows the roads radiating likes spokes on a wheel from Tara's hub. Macalister notes that at one point, old people could still give the detail of these routes, or at least the initial points.[52] Added to the extensive list of ancient sites surrounding Tara, this evidence leads to the conclusion that monuments and prominent terrain features combined to form a series of reference points that, when combined, formed the five great roads of Ireland. Can literature provide any more clarity or strength to this archaeological foundation?

---

[49] Macalister, pgs 76-77.
[50] Watkins, pgs 69-70.
[51] Macalister, pg 79.

The evolution of terminology used to describe the Irish transportation network sheds some critical light on the conceptualizing of roads and the purpose that they served. The Great Slighe were a group of five roads that connected the extremities of the island to its approximate geographical center at Tara, but they have left no physical trace yet uncovered by modern man. Instead, all of our information about these highways comes from references in the heroic literature and the explanation of these routes that comes to us from the *Metrical Dindshenchas*.

What clues do these sources offer? The first etymological clue comes in the word initially used for road - slige. The Old Irish verb Sligid means "hewing, cutting down."[53] The detailed account of the route taken by the army of Connacht includes an incident where Ailill chose a route blocked by heavy forest. According to the *Tain*, "Then the men of the armies cut down the forest before the chariots. The place is now called Slechta, the Hewn Place."[54] Initial impressions thus give the idea that the great highways and roads of old started as ways cut through woods to facilitate travel.

Another aspect of "the act of hewing, cutting down" involves the need of lumber for the creation of a way through the bogs of central Ireland. According to Barry Raftery, "Before modern drainage central Ireland was a vast expanse of soggy marshland, interspersed with small islands and larger areas of dryland."[55] His investigations show that a vast network of tracks crisscrossed the bogs. Most of the trails were crudely

---

[52] Macalister, pg 79.
[53] Patrick S. Dinneen, *Foclóir Gaedhilge agus béarla* (Dublin: Irish Texts Society, 1927), page 1055.
[54] TBC, pg 71.
[55] Barry Raftery, *Trackways Through Time: Archaeological Investigations on Irish Bog Roads, 1985-1989* (Rush: Headline Publishing, 1990), page 1.

constructed of brushwood with an occasional footpath built of oak planks.[56] None of the segments that he located extended more than one-half mile. The impression is one of a series of meandering paths made by felling trees close to hand to facilitate travel from one dry spot to the next. These dry spots served as landmarks for the local population and the multiplicity and primitive nature of the tracks connecting them indicate that the tracks were not intended to be permanent. As the bogs grew and the landmarks shifted, so too did the connections between them.

The itinerary of the Connacht army given in the *Táin Bó Cuáilgne* serves as an example of the Irish way. The route begins with them traveling southeast:

> Through Muicc Cruinb,
> Through Terloch Teóra Crích, the marshy lake bed where three territories meet,
> By Tuaim Móna, the peat ridge,
> Through Cúil Silinne, where Carrcin Lake is now…
> Southward by ochaine hill,
> Northward by Uatu
> By the river Dub[57]

Of the fifty-seven entries listed on the route, only one refers to a road, specifically to the Midluachair Road. The entry reads "by the ridge Druim Cain, on the Midluachair road"[58] At least six locations in Ireland are named Druim Cain.[59] By identifying this Druim Cain as the one on Midluachair, as opposed to the Druim Cain near Limerick or the one near Cashel, the storyteller used the reference to differentiate between similarly named landmarks. The additional information in the entry proved necessary to clarify which Druim Cain the army of Connacht used as a waypoint. The landmarks described in the

---

[56] Raftery, pg 47.
[57] TBC, pages 63-64.
[58] TBC, page 64.
[59] Edmund Hogan, *Onomasticon Goedelicum Locorum et Tribuum Hiberniae et Scotiae* (Dublin: Four Courts Press, 1910; 1993), page 359.

Tain all denoted prominent geographic features, easy to identify and permanent. The path of the army took them along a series of markers that led them to their destination.

The tale *The Intoxication of the Ulaid* depicts a drunken foray by the heroes of Ulster. As they left Ulster on their way to attack the kingdom of Cú Ruí to the southwest:

> This is the road they took: on to the green of Dún Dá Bend, past Cathir Osrin, Lí Thúaga and Dún Rígáin to Ollarba in Mag Machae, past Slíab Fúait and Áth na Forare to Port Nóth Con Culaind, past Mag Muirthemni and Crích Saithni, across Dubad, across the rush of the Bóand and into Mag mBreg...across the Brosnas of Bladma, with Berna Mera ingine Trega (today called Bernán Ele) on their left and Slíab nEblinni ingine Gúare on their right[60]

their route is marked by mountains (singular Slíab, plural slebe) and well known features in the landscape such as the cathair (a form of stone monument) and the various plains (mag). Interestingly, even though the warriors of Ulster had traveled to the south many times, "Conchubur, king of Ulaid, said 'Never before have we taken this route from Dún Dá Bend to Dún Delga."[61] This time they took a different path even though the overall route remained the same.

Early sources have painted a rough picture of Irish roads before the coming of Christianity and Latin influence to Ireland. From the fifth century on, Latin influence began to affect Irish perceptions of roads. Increasingly, words like 'rod' begin to appear. Multiple texts were written in part to explain new words or uncommon meanings, in part to clarify existing terminology. Examples include *Cormac's Glossary*, written around the year 900 A.D. and the *Calendar of Oingus the Culdee*, supposedly written in the ninth

---

[60] Jeffrey Gantz, ed., *Early Irish Myths and Sagas* (London: Penguin Books, 1981), page 196.
[61] Gantz, page 197.

century.[62] Kelly translated a tract on roads from Trinity College Manscript H 3.18 that describes five types of roads (roda): slige, ród, lamraiti, tograiti and bothar.[63] Of the five, only the slige extends outside of the locality; the other four describe the paths within the kingdom: the lamraiti connects larger roads and allows "for errands and winter-visiting;"[64] the ród's purpose is "a horse-road of the locality internally;"[65] and the tograiti and bothar allow for the passing of cattle herds from one area of pasture to another. Since the tograiti and bothar often crossed over land owned by someone else, the amount of toll was included in the description.[66] This text differs only slightly from the description of roads given in *Cormac's Glossary,* where there is included another path smaller than the bothar called a set.[67] The description and use of each 'road' reinforces the local nature of these paths, as they evolved in response to the needs of growing communities which included communication and movement within a limited area. While an increasingly specific definition of roads illustrates a heightened association of physical characteristics with the roda, there is no indication of any effort to develop the trans-regional slighe.

The growth of local travel seems to correspond to an increased level of economic activity centered around the monastic communities then evolving into towns. Doherty's study on economic history and the Church shows a rise in the secular activities of the religious establishments starting in the eighth century. Of particular note are the growth

---

[62] All are contained in Whitley Stokes, *Three Irish Glossaries* (London: Williams and Norgate, 1862). Also of note is the fact that both authors were churchmen: Cormac was the Bishop of Cashel and Oingus a member of the Culdee religious movement.
[63] Fergus Kelly, *Early Irish Farming* (Louth: Dublin Institute for Advanced Studies, 1997), page 538. The manuscript page is 373.
[64] Kelly, page 538.
[65] Kelly, page 537.

of markets and the relocation of the oenach (fair) to monastic grounds.[68] Goods came to the monastery either as tribute, rent, or for trade. While these sites may really not have been towns,[69] the importance lies not in the terminology used but the function. The monastic communities' growing involvement in the community resulted in the stimulation of the local economy. Archaeological evidence indicates that prior to the sixth and seventh centuries, iron tools, enamel, and basic copper items were produced and used on-site.[70] According to Kelly, "The evidence of our sources suggests that most food was consumed within the household which produced it, and there is little evidence of trade in foodstuffs in texts of the Old Irish period."[71] Similarly, McCormick notes a home consumption of animals in the native economy which he differentiates from the town economy of the Vikings.[72] All of these ideas lead into the findings of Walsh, who believes that the only real centers of trade were the monastic towns.[73] That the monastic communities performed increasingly as a local market can hardly be denied. With the fledgling growth of trade came a byproduct – roads. Trade required traffic, and steady traffic created roads. The growth of the monastic towns might have triggered the development of the local transportation network, a change reflected in the multitude of

---

[66] Kelly, page 538.
[67] Kelly, page 537.
[68] Charles Doherty, "Some Aspects of Hagiography as a Source for Irish Economic History" in *Peritia* 1(1982), pages 302-303.
[69] Mary A. Valante, "Reassessing the Irish 'Monastic Town'" in *Irish Historical Studies* (1997?), pages 1-18. She does not deny that the monasteries were involved in local trade, instead her concern is with what she sees as an overemphasis on their role turning these sites into high volume re-distribution centers.
[70] Nancy Edwards, *The Archaeology of Early Medieval Ireland* (London: B.T. Batsford Ltd, 1990), pages 86-95.
[71] Fergus Kelly, page 319.
[72] Finbar McCormick, "Stockrearing in Early Christian Ireland" (Ph.D. diss., Queen's University of Belfast, 1987), page 180.
[73] A. Walsh, *Scandinavian Relations with Ireland During the Viking Period* (Dublin: The Talbot Press Limited, 1922), page 21.

texts dealing with roads written from the ninth through the tenth centuries. While the codification of local paths as roads is significant, until the tenth century at least the overall concept of the road had not changed.

Lines of communication that connect far-flung areas to a center require the existence of a central authority. Self-sufficient communities had no reason to develop connections to the outside. The Roman road network had arisen to facilitate military communications, commerce, the imperial post, and even pleasure.[74] With none of these motivations in Ireland, the drive to interconnect did not exist. This is very important for tactical reasons. With no roads connecting kingdoms, no high-speed avenues into neighboring territories existed. The paths that did exist would be highly affected by weather as opposed to the paved roads existing in England and the continent.

At this point, consider the methods of movement. Roads have a significant impact on the movement of armies. Albert Leighton sums up this relation masterfully, saying that:

> The means of transport and the route have a reciprocal effect on each other. Walking men require little in the way of a path; men on horseback or driving pack-animals need a route which is wider and better prepared; vehicles generally require still wider roads and much maintenance of the road surface.[75]

According to this theory, the roads of Ireland supported little in the way of vehicular traffic. That the Irish used pack animals finds a good deal of support. Kelly noted an entry in *O'Mulconry's Glossary* which described two types of pack horses, noting the use of the pack-horse or suma for the carrying of grain.[76] An entry in the *Fragmentary*

---

[74] Skeel, chapter one.
[75] Albert C. Leighton, *Transport and Communication in Early Medieval Europe AD500-1100* (New York: Barnes & Noble Inc., 1972), page 48.
[76] Kelly, page 91.

Annals attests to the use of pack animals in military operations as well. In 870 the men of Leinster ambushed an Uí Neíll raiding party. During the battle:

> There were heard the cries of men driving each other to distress, and the clamour of the war trumpets; and the earth began to shake so that their horses and pack animals ran mad, and that was a great impediment to the actions of the warriors. Nevertheless, those of the army who were in the clefts of the rocks went after the pack animals and stopped many of them.[77]

Horses filled a need for transport in a way that still retained some flexibility for movement. While the animals could not travel through all the terrain that men could, terrain such as the bogs and steep hillsides of the west, they provided a way to move larger objects and equipment. Such a compromise resulted in a military organization far more mobile than the Carolingian cavalry and Norman armies that dominated so much of Europe.

Understanding how the Irish viewed roads also helps to identify how they conceptualized strategy and maneuver. An army not bound to a road could approach an enemy from almost direction. Defenders had to understand the critical elements of terrain that could not be bypassed. Descriptions of encounters at fords occur frequently in literature and occasionally in the annals. The terse nature of most of the annalistic entries resulted in little information about fighting beyond who was involved. Occasionally an entry such as "Death of Áedh, son of Niall Frossach, at Áth-dá-ferta"[78] describes a location or geographic feature of note. While such records give indications, the heroic tales fill in the details. The encounters between the Ulster hero, Cúchulainn, and the army of Connacht revolve around key terrain. The first clash occurred at Áth

---

[77] Joan Newlon Radner, ed., *Fragmentary Annals of Ireland* (Dublin: Dublin Institute for Advanced Studies, 1978), page 141.

Gabla where Cúchulainn intercepted the lead elements of the army, killing four warriors before he withdrew.[79] When next he encountered the men of Connacht, Cúchulainn was again at a ford. The Ulster hero killed a Connacht warrior at this ford of Áth Fuáit prior to falling back yet again.[80] Time and again, Cúchulainn intercepted the Connacht army at chokepoints, slowing their advance to a crawl as he waited for his father's army. He did not wait along the roads or paths, instead choosing to position himself at a location around which Medb and Aillil would not be able to maneuver. The limits of their travels occurred at natural choke points, places where a variety of options did not exist, such as the áth, or ford. Many trails or ways might lead to a point on a river but then they converged at locations where crossing the river was possible. Thus routes could be defined even better as a series of landmarks that led to chokepoints between destinations. Militarily this is of great consequence and seems to find a great deal of support in the literature.

To intercept one's enemies, the most likely place for success would be at a place where the enemy had to pass. Records of battles at fords abound, and that is where defenders waited for attackers. A defender who set up an ambush along a path very well might find that his opponent went around the other side of the mountain, but if he set up at the only ford within fifty miles, the probability of his foe trying to cross there was increased dramatically.

The logistical consideration known as transportation provides a crucial aspect in understanding the Irish way of war. For them a road was less a physical construct and

---

[78] *Chronicum Scotorum*, Translated by William M. Hennessey (London: Longmans, Green, Reader, and Dyer, 1866), page 131, hereafter referred to as CS.
[79] TBC, page 73.

more a way between distant points. Roads provided direction and found physical bounds only in constricted terrain. With the countryside as a road, they saw maneuver in a different light from their European counterparts. While the lack of bounds facilitated the use of alternate routes, it limited the means available for hauling bulk supplies. Limited infrastructure meant that the Irish would have to rely on pack animals to move equipment too large for a man to carry and also limited the options as far as provisioning. These considerations are the focus of the next chapter.

[80] TBC, page 93.

Feeding the Force

Those who provisioned Medieval Irish armies and those who provisioned Medieval European armies faced similar challenges in the accomplishment of their task. Each developed a system for purveying rations for the troops based on the type of agriculture practiced in its region. The system for feeding troops in Ireland did evolve over time. While the foundation for the model remained the same, other aspects changed with increased technology, administration and social changes.

Feeding soldiers is far more difficult than it initially seems. Food must be raised or grown and then collected or stored in sufficient quantity for the upcoming operation. By the commencement of hostilities, sometimes even before, the rations must be moved to where the warriors would consume them. These logistical concerns raise several questions: What resources were available for feeding troops? How were supplies gathered? How were the supplies moved from storage to the troops and in what form? What size force could the available supplies support?

Generally, historians accept the theory that bread served as the primary ration for pre-modern European armies. Geoffrey Parker noted, "To begin with, every soldier required bread, and in most armies the daily ration was reckoned at 1.5 pounds a day (or a 3-pound loaf every two days)."[81] Gustav Perjes put the daily bread ration per man at about one kilogram[82] while Bernard Bachrach put the medieval requirement at two kilograms of unmilled wheat per man, per day.[83] Engels' work on Alexander the Great showed the

---

[81] Geoffrey Parker, *The Military Revolution* (Cambridge: Cambridge University Press, 1988), page 75.
[82] Gustav Perjes, "Army Provisioning, Logistics and Strategy in the Second Half of the 17th Century" in *Acta Historica* XVI (1970), page 5.
[83] Bernard S. Bachrach, "Logistics in Pre-Crusade Europe" in *Feeding Mars*, John A. Lynn ed., (Boulder: Westview Press, 1993), page 71.

Macedonian army issued a ration of approximately one kilogram of wheat as well.[84] Thus the accepted view seems to be that the average soldier fighting in Europe from roughly 350 B.C. to the seventeenth century A.D. required between one and two kilograms of bread daily.

Moving these bulk grains presents its own challenges. Leaders had to find a way to transport the grain to feed the troops. Movement over land by horse was most common, but there were limits to the amount the packhorse could carry. Packhorses could transport roughly 100 kilograms of cargo, but of this amount, at least a portion went to feed the horse itself. Bachrach argued that packhorses, fed exclusively on grain, would consume their entire load in twenty days.[85] In normal circumstances, however, at least some portion of the animal's diet would consist of forage if available. Perjes concluded that two kilograms of oats per day could replace forage for a day or two.[86] In either event, packhorses proved inefficient for any long period of time since they ate an increasingly larger percentage of their load as the campaign progressed.

A solution to this problem was the use of carts and wagons with the capability to carry around 500 kilograms of cargo. The draft animals ate a far smaller portion of the hauled grain. Using Bachrach's standard of two kilograms of milled wheat as the daily ration per soldier, an army of 1,000 men would consume four carts of grain daily. The practical implications can be assessed by looking at Charlemagne's campaign of 806. The Carolingian king required troops to bring three months of food on carts when he called

---

[84] Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkely: University of California Press, 1978), pages 123-124.
[85] Bernard S. Bachrach, "Animals and Warfare in Early Medieval Europe" in *Armies and Politics in the Early Medieval West* (Aldershot: Variorum, 1993), page 723.
[86] Perjes, page 10.

the assembly for the campaign in 806 A.D.[87] Assuming that his army only brought grain, no vegetables, fruits, or preserved meat or fish, it is possible to determine roughly the size of his logistical train. If Charlemagne only called a thousand warriors, he required around 360 carts (ninety days at four carts per day). Additional carts would carry clothing, tents, baggage, and the equipment needed for baking the bread itself.

Military commanders could reduce the size of their support elements if they chose to move supplies by water instead of over land. Michael Prestwich noted that, "The Bayeux Tapestry provides a pictorial record of the loading of William's invasion fleet with arms,

Figure 7: A man drawn wagon from the Bayeaux Tapestry

Source: Albert C. Leighton, *Transport and Communication in Early Medieval Europe AD500-1100* (New York: Barnes & Noble, Inc, 1972)

equipment, barrels of drink and *sacks of food*."[88] This meant that the Norman force initially did not have to seek rations once they arrived in England. They did, however,

[87] Bachrach, "Logistics in Pre-Crusade Europe", pages 70-71.

[88] Michael Prestwich, *Armies and Warfare in the Middle Ages* (New Haven: Yale University Press, 1996), page 249. (Emphasis added is mine). Prestwich discusses some of the same challenges in locating sources

have to find the means to transport supplies overland once they arrived. While water transport proved efficient along the coast, the lack of a navigable network of inland waterways necessitated turning to carts once the Normans moved inland. On the continent, Charlemagne had faced a similar problem with moving supplies. As the example from 806 showed, his army created a serious transportation challenge. Charlemagne attempted to solve part of his supply problem by building a canal linking the Rhine and the Danube.[89] The completion of the canal would have substantially reduced the requirement for land based transportation as the army could march along the canal receiving supplies as needed. Even though this effort shows how valuable a waterborne system of supply could be, it depended on existing waterways. If a region lacked a connected system of navigable waterways, overland transport again became the only feasible means of supplying forces in the field with grain for bread. This situation existed throughout most of Europe and England.

The use of bread as the primary means of nutrition for soldiers in the field holds two primary implications: bread served as a staple diet for the peasantry and thus would also feed soldiers, and the economy produced enough surplus grain to feed large collections of excess population. The lands that eventually became France and Germany relied on cereal crops as their major agricultural product. It seems fairly logical that a grain-growing society looked to cereals to support its army. Conversely, an economy that was not based on cereal crops, but rather on dairying, would have to find something else for sustaining armies in the field.

---

prior to the twelfth century. Using evidence from the Pipe Rolls of Henry II he provides significant analysis of the massive quantities of supplies (primarily grain) used by the English to provision their forces.

[89] Bachrach, "Logistics in Pre-Crusade Europe", page 57.

Irish sources yield few references to wagons or carts accompanying the various raiding parties and expeditions conducted throughout Ireland. Froissart noted that the mounted Scottish warriors (a Gaelic society not far removed from the Irish) carried "a large flat stone placed between the saddle and the saddle-cloth and a bag of oatmeal strapped behind...they lay these stones on a fire and, mixing a little of their oatmeal paste with water...and make a small cake rather like a wafer."[90] He also noted, however, that "they bring no baggage carts and so carry no supplies of bread."[91] Irish warriors who marched on foot could not be expected to employ this technique. A search through the Irish sources, coupled with archaeological evidence on the agriculture practices of the Irish at this time, lead to another conclusion - that the Irish relied heavily on provisions that moved themselves: cattle.

Figure 8: The ox - symbol of St. Luke

Source: Del Sweeney, ed., *Agriculture in the Middle Ages* (Philadelphia: University of Pennsylvania Press, 1995)

The provisioning of Irish armies reflects the agriculture and economy of Ireland in the medieval period. Finbar McCormick noted that "Detailed examinations of the historical evidence for early Irish agriculture...indicate unequivocally that cattle

[90] Jean Froissart, *Froissart: Chronicles*, ed. Geoffrey Brereton (London: Penguin Books, 1978), page 47.
[91] Froissart, pages 46-47.

raising played a primary role in the economy."[92] He also noted that even today, the Irish use only 11% of the arable land for crops with the majority going to pasture and hay.[93] Sean Duffy noted that "Dairy farming was at the heart of the Irish agricultural system," and that "Some arable farming was done in all parts of Ireland, but it was generally not as important as pastoral farming."[94]

But the Irish planted crops as well. Archaeological evidence indicates a growth in arable farming beginning in the first century A.D. and continuing into the Middle Ages. Pollen analysis of the southeastern portion of the island, which embraced the majority of the fertile areas, indicates a decline in tree pollens and a slow increase in cereals from the first century to the sixth. Radiocarbon dating puts the rise in agriculture around Wexford between 430-770 A.D.[95] These regions consisted of lighter soils that the ard plow then used by the Irish could turn effectively.

Mitchell credited the introduction of the heavy plow with a moldboard to Irish monks, who traveled throughout Carolingian Europe where it was used and brought the heavy plow back with them.[96] The heavy plow enabled farmers to put the richer soils of the low hills into productive use. Such a theory suggests that the Irish did not begin to bring the heavier soils of the uplands under the plow until the fifth and sixth centuries. Lynn White argued quite convincingly that the heavy plow was not introduced to Britain and

---

[92] Finbar McCormick, "Dairying and Beef Production in Early Christian Ireland: The Faunal Evidence" in *Landscape Archaeology in Ireland*, Terence Reeves-Smyth and Fred Hammond, eds., (Oxford: BAR British Series 116, 1983), page 253.
[93] Finbar McCormick, "Stockrearing in Early Christian Ireland" (Ph. D. diss., Queen's University of Belfast, 1987), page 26.
[94] Seán Duffy, *Ireland in the Middle Ages* (New York: St. Martin's Press, 1997), pages 11-12.
[95] Nancy Edwards, *The Archaeology of Early Medieval Ireland* (London: B.T. Batsford, 1990), page 50.
[96] Frank Mitchell and Michael Ryan, *Reading the Irish Landscape* (Dublin: Townhouse, 1997), page 287.

Ireland until the late ninth or early tenth centuries by the Danes.[97] The shift from grinding grain by hand to the use of water mills implies an increase in grain production, and the existence of horizontal mills from the seventh century onwards has been proven using dendochronological dating as well as Carbon-14 techniques.[98] An increasing sophistication in milling is a sensible reaction to greater demands for flour. In other words, the Irish did not begin producing large surpluses of grain until the fifth century at the earliest, and more likely closer to the ninth century. Thus the rations used by armies might reflect a similar change in composition.

There is also the question of storage. There is no native Irish word for barn; Old Irish *saball* is a derivative of the Latin *sabellum* in use by the eighth century.[99] Archaeological investigation suggests that the Irish stored grain in barns, not in pits, and this finds support from site investigations. Nancy Edwards suggests that corn became increasingly important around the middle of the eighth century.[100] With no linguistical or archaeological evidence suggesting the storage of grain in large quantities before the eighth century, it seems safe to assume that agriculture began to increase in importance at this time.

One tale from the *Life of Columba*, now thought to be a late seventh century document, helps to put the changing agricultural scene in perspective. In it, Columba and a layman discuss the ravages of barbarian raiders. Columba noted that the area "is now being plundered by barbarian marauders....your family escaped...but the invaders have

---

[97] Lynn White Jr., *Medieval Technology and Social Change* (London: Oxford University Press, 1962), pages 49-53.
[98] See Dáibhí Ó'Cróinín, *Early Medieval Ireland 400-1200* (London: LogmanGroup Limited, 1995), page 96 and Mitchell, page 286.
[99] Ó'Cróinín, page 94.

driven away with them all your little cattle....likewise carried off with the prey all your household furniture."[101] The raiders took everything that the farmer owned but this account did not make reference to any significant amount of grain, suggesting the importance of cattle, not grain, to the Irish farmer. The cultivation of cereal crops continued to increase, helped by the influences from outside Ireland, but this growth remained secondary to dairying, the primary basis for the economy.

Finbar McCormick noted that "Detailed examinations of the historical evidence for early Irish agriculture...indicate unequivocally that cattle raising played a primary role in the economy."[102] The Irish used cows as a medium of exchange[103] and the common farmer was known as a bóaire or 'lord of cows.'[104] Such an economy revolved around a cycle of fertility that had two dietary results: milk, which the Irish used to make various dairy products, and meat, which came from the calves born each year. Breeding, calving, milking and eventually slaughter all contribute to the nutritional potential of the surplus animals born each year. Heifers were bred at about three years of age, and they gave birth to their first calf a year later.[105] In comparison with the modern practice of breeding at one to one and one-half years, the late breeding of medieval cattle suggests both a lack of quality fodder as well as the late maturation of the cows themselves. Since it is assumed that the majority of the cows were forage-fed, they did not develop as quickly as grain-fed animals. This helps to account for the extra two years in which a heifer was of

---

[100] Nancy Edwards, *The Archaeology of Early Medieval Ireland*, page 63.
[101] Alan Orr Anderson and Marjorie Ogilvie Anderson, eds., *Adomnan's Life of Columba*, trans. Alan Orr Anderson and Marjorie Ogilvie Anderson (London: Thomas Nelson and Sons Ltd., 1961), page 309.
[102] Finbar McCormick, "Dairying and Beef Production in Early Christian Ireland," page 253.
[103] Duffy, page 11.
[104] O'Cróinín, page 99.
[105] Fergus Kelly, *Early Irish Farming* (Louth: Dublin Institute for Advanced Studies, 1997), page 37.

little value either for meat or dairy purposes. Once bred, the heifer would give birth sometime in the spring.[106] The cow began lactating, furnishing the milk that fed the calf and provided drink and the raw materials for the making of curds, butter, and cheese. Most of the cows would dry off before winter,[107] although a few may have been bred later in the season to provide fresh milk in the winter months. During the lactating period, the cow might produce up to 100 gallons of milk, but often much less.[108]

The Irish did not forget about the calves that started the lactation cycle each spring. Some of the female calves would be marked to replace older cows nearing the end of their usefulness. One or two of the male calves would be selected to replace an ox. Most, however, met the slaughterer's axe.

The idea that the Irish used surplus calves for meat production has neither been widely articulated nor accepted. A.T. Lucas wrote that "There are no beef-eating heroes in Irish literature; the doughtiest Irish warriors relied on pig-meat for their intake of protein. A herd of bullocks would have been an unthinkable phenomenon and it is to be suspected that all bull calves were killed at birth."[109] He made an exception only for animals kept for breeding and those put to the plough.

Archaeological sources and literature both provide evidence to question Lucas' assertion. Setting aside the literary sources for a moment, McCormick demonstrated the degree to which the Irish really did use cattle for meat. He asserted that meat was not the primary focus of breeding. Instead, when each cow bore a calf to stimulate the all

---

[106] Ó'Cróinín, page 101.
[107] Kelly, page 65.
[108] Robert Trow-Smith, *A History of British Livestock Husbandry to 1700* (London: Routledge and Kegan Paul, 1957), page 58.
[109] A.T. Lucas, *Cattle in Ancient Ireland* (Kilkenny: Boethius Press, 1989), page 4.

important flow of milk, a substantial byproduct resulted - extra bulls. McCormick stated that "The number of calves produced each year would, however, greatly exceed the number needed to maintain the herd at optimum size. This would be especially true in the case of male calves as only a small number would be required for breeding purposes."[110]

So what to do with the surplus bulls? One option would be to kill them immediately to prevent them from eating limited pasturage and to eliminate the need for someone to watch over them. Nancy Edwards, following Lucas' lead, noted that, "All but the few male calves required for stud or draught were killed for their meat when still young, but heifers were allowed to grow to maturity."[111]

More in-depth analysis of the osteological and faunal remains at several sites in Ireland call portions of her assertion into question. McCormick's research found that roughly 40% of cattle were slaughtered when aged between 13 and 24 months. The next largest group was three years old or older, indicated by bones which had fully developed.[112] In other words, the excess animals were allowed to grow for at least a year and then slaughtered as they were needed for meat. This plausible alternative meant that the calves were put to pasture for a short period, up to a year or even eighteen months. Bede noted that the favorable climate of Ireland eliminated the need to shelter animals or store hay for feeding them in winter; the animals could graze year round until needed for slaughter.[113] McCormick also noted that, of the bone samples that could be identified,

---

[110] McCormick, "Dairying and Beef Production in Early Christian Ireland", page 254.
[111] Edwards, page 57.
[112] McCormick thesis, page 87.
[113] Bede, page 46.

from animals killed after three years) between 68% and 82% were females.[114] This means that the majority of the animals slaughtered between the ages of 13 and 24 months were in all likelihood young males. In other words, the dairying system resulted in a by-product: meat.

The cattle produced in the Irish pastoral system were much smaller than modern beef animals. In discussing the poor quality of the cattle of this era, Bokonyi noted that "Early medieval cattle, according to the osteological and artistic evidence, were quite uniform all over Europe. They were small, slenderly built, primitive animals with long legs, the trunk was not very deep and had little flesh."[115] For most of his analysis, McCormick made the assumption that a fully-grown animal weighed around 450 kilograms.[116] A more accurate assessment of the size and thus yield of a medieval cow can be made. A modern study on dairy breeding lists the weight of a modern straight-bred cow at 372 kilograms.[117] If a cow yields meat equal to 50% of its live weight, around 186 kilograms of meat should result from dressing out the slaughtered animal.[118] Parker's numbers for sixteenth century yields are even smaller. His data, based on records kept along the Spanish roads indicated that slaughtered bullocks rarely yielded more than 150 kilograms of meat.[119]

Bokonyi provides another possible solution to the question of the weight of a medieval cow. He noted that the withers height of an average tenth century cow was 108

---

[114] Ibid., page 92.
[115] Sándor Bokonyi, "The Development of Stockbreeding and Herding in Medieval Europe" in *Agriculture in the Middle Ages*, Del Sweeney, ed., (Philadelphia: University of Pennsylvania Press, 1995), page 43.
[116] McCormick, Thesis, page 181.
[117] J. Hammond, J.C. Bowman and T.J. Robinson, *Hammond's Farm Animals* (London: Edward Arnold, 1940), page 277.

centimeters, a sixteenth century cow 120 centimeters and a modern cow 135 centimeters.[120] Combining this information with McCormick and Parker gives a relative size ratio of medieval cow to sixteenth century cow of 90% and medieval cow to modern cow of 80%.[121] Using these numbers gives a yield of between 135 and 148.8 kilograms of meat with an average of 141.9 kilograms. Calculations later in this chapter will use 142 kilograms of meat per bullock.

The Ulster Cycle stories provide the first literary glimpses of the use of cattle as food during military operations in Ireland. Lucas uses the 'Cattle Raid of Regamon' to begin examining the idea of mobile rations, by analyzing a request to Regamon for a gift of cows by the sons of Ailill and Medb to "meet the need that there is on us for feeding the men of Ireland, when the cows are driven from Cooley."[122] The implication is that Regamon's cows would feed the army on the outbound journey, while cattle taken as spoils would be eaten on the return trip. This story serves as one of the first literary references to the feeding of an Irish military venture. Here there is a link between providing food for the army and attempts by Ailill and Medb to gather the necessary supplies *before* the operation. This indicates that Ailill and Medb planned on using cattle for food, in addition to whatever foraging the army did or stocks of dry goods that they carried. The 'Cattle Raid of Cooley' adds further detail when it notes that "They went round the river Colptha then to its source at Belat Alióin and spent the night at Liasa

---

[118] McCormick, Thesis. Page 181. McCormick determined that the dress out of cattle resulted in a 50% yield and 80% for pigs.
[119] Parker, page 206.
[120] Sandor Bokonyi, page 43.
[121] The calculations are 108cm/120 cm = .9 for the ration between medieval and 16th century cows, and 108cm/135cm =.8 for the medieval to modern comparison.
[122] As cited in Lucas, *Cattle in Ancient Ireland*, page 91.

Liac. It is so called because they made sheds (liasa) for their calves there."[123] Another version of these events cited by Lucas says that:

> The men of the four great provinces of Ireland encamped that night at Bélat Aileáin. Until then its name was Bélat Aileáin, but from that time its name was Glenn Táil, because of the great amount of milk which the herds and cattle yielded there to the men of Ireland. And Líasa Líacc is another name for that place. It is so called because it was there that the men of Ireland built byres and enclosures for their herds and cattle.[124]

Both versions of the tale claim that the raiders brought cattle with them, while the reference to herds as well as cattle suggests that more than milk cows accompanied the troops of Medb and Ailill. These tales imply that cattle provided some form of nutrition for the army, but they do not give definitive indications as to whether the cattle were used only for milk as Lucas suggests or that the army also killed them for meat.

The legal tract, *Crith Gablach*, provides support for the literary evidence, by providing that "a king is entitled to requisition dry cattle in the wilderness (sesclabrae i ndithrub) for his army when it is returning from a campaign; however, he must subsequently restore their equivalent."[125] The text specifically mentions 'dry cattle,' i.e. these animals can provide no nutritional value unless it is as meat. Since the king must restore their equivalent, the original animals clearly are no longer available. In other words, the king was expected to provide meat for his men to eat. A later source, *The War of the Gaedhil with the Gaill,* written in the early twelfth century probably under the influence of Brian Boru's grandson, adds a few more clues.

---

[123] *Táin Bó Cúailnge*, edited by Cecile O'Rahilly (Dublin: Dublin Institute for Advanced Studies, 1976), page 154. This translation comes from Recension I of the saga and in this section, appears less detailed than that used by Lucas.

[124] Lucas, page 92. Lucas uses the version of the *Táin* from the *Book of Leinster* as translated by Cecile O'Rahilly (see above note) in 1967.

Two events in *The War of the Gaedhil with the Gaill* illustrate how the Irish relied on cattle to supply rations for warriors "in the field." The first occurs during King Brian Borumha's great expedition around Ireland in 1005 AD, when he and his army were at Craebh Tulcha (in Ulster, see map) and received provisions from local purveyors; "They supplied him there with twelve hundred beeves; twelve hundred hogs, and twelve hundred wethers."[126] The text makes no reference to grain, fodder, or any other form of foodstuffs. In other words, Brian secured beef cattle, sheep and hogs to feed his army and nothing more. To pay for these rations, the King "bestowed twelve hundred horses upon them, besides gold, and silver...For no purveyor of any of their towns departed from Brian without receiving a horse or some other gift."[127] This quotation makes two additional points: first, that Brian traded away the horses that he could have used to move bags of grain if he had purchased any, and second, that the animals purchased for consumption came from multiple locations. The implication of the phrase 'any of their towns' is that purveyors came from places besides Cráebh Tulcha. The saga does not provide enough detail to determine how large an area was required to provide the animals purchased by Brian but it does hint at a sizable area. By bringing excess animals to the army at Cráebh Tulcha, the purveyors for these smaller settlements turned excess production into profit. They also gave the king what he needed - a new supply of mobile food.

The second event occurred after the battle of Clontarf in 1014 AD. Brian's son Donnchadh had not participated in the battle. As the combatants searched the field for

---

[125] Kelly, page 44.
[126] *Cogadh Gaedhil re Gallaibh*, Translated by James Henthorn Todd, (London: Longmans, Green, Reader, and Dyer, 1867), page 137.

friends and treated their wounded, Donnchadh arrived "with a great prey at the hour of vespers on the night of Easter Sunday," and he "brought with him a great spoil of eight-and-twenty oxen, and they were all slaughtered on the Green of Ath Cliath."[128] This most certainly indicates that the Irish army killed the cattle for food.

Can these references to the use of beef for provisioning the Irish fighters provide more information than just how they supplied their food? Scribes and bards might inflate numbers when describing battles and fighting. They wanted to show the prowess of their hero in overcoming a much larger foe, such as Cú Chulainn's defeat of 'thrice fifty boys,'[129] or the imposing authority of a monarch, as evidenced by the description of the army of Ailill and Medb whose sons brought 21,000 Irish fighters for their raid.[130] While scholars cannot blindly accept these numbers, those that describe more mundane aspects in a story might come closer to the truth. These numbers provide enough clues to estimate the size of Irish armies.

Combining the information from the *The War of the Gaedhil with the Gaill* with some archaeological work provides insight into the approximate size of Brian's army. How long were his supplies to last? The usual period of military service for Irish troops was six weeks.[131] By determining how long the rations purchased at Cráebh Tulcha had to last, the size of Brian's army can be deduced. Starting at Kincora, Brian's troops traveled on a circuit through Connacht and the lands of the northern Uí Neíll, covering roughly

---

[127] Ibid., page 137.
[128] Ibid., page 211.
[129] O'Rahilly, *Táin Bó Cúailnge,* page 138.
[130] Ibid, page 125.
[131] Alice Stopford Green, *History of the Irish State to 1014*, (London: MacMillan and Co., 1925), page 270.

280 miles in a minimum of fourteen days before arriving at Cráebh Tulcha.[132] Since he released several units at that point, it is far more likely that they had taken longer, probably closer to three weeks. The supplies that the king requisitioned would therefore need to last for the remainder of the operation as well as the return trip home. Thus the supplies from Cráebh Tulcha needed to last for about three weeks to finish the campaign.

Archaeologists contribute the next pieces to the puzzle. McCormick's study on beef production shows that 90% of meat consumed came from cattle.[133] The pigs and sheep would provide some variety but the bulk of the nutritional value came from beef. Previously it was determined that the average beeve yielded 142.5 kilograms of raw meat when slaughtered. Following the numbers given in *The War of the Gaedhil with the Gaill,* which seem to be accurate although rounded, yields roughly 171,000 kilograms of beef and another 17,100 kilograms of beef equivalents from the sheep and pigs, the grand total being 188,100 kilograms of beef. Nutritional tables record 2,130 calories per kilogram for lean beef on average.[134] Multiplying the total weight of beef by its caloric value gives a caloric value of the meat as 400,653 kilocalories.

Turning this number into useful information requires finding an estimate of the calories each soldier needed. Following modern U.S. Army planning figures, the average

---

[132] This assumes that the army averaged twenty miles a day which is quite rapid movement for a sustained march. A more likely rate of march is 12-15 miles per day which supports the argument for closer to three weeks (24 days at 12 miles per day and 18 at 15 miles per day).

[133] McCormick in *Landscape Archaeology in Ireland,* page 260. Multiplying the total number of cattle purchased for slaughter by 110% would thus give the approximate number of cattle equivalents required to feed Brian's force (1,200 x 1.1 = 1,320).

[134] *Food Composition and Nutrition Tables 1986/87,* 3rd edition (Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1986), page 225. Using this factor gives the total number of nutritional calories that the purchased animals would provide (35,640 x 2,130 = 75,913,200).

soldier needs 3,600 calories per day.[135] While the average soldier today is much larger than the average fighting man of the tenth century, the increased activity of the Irish fighter counterbalances the size difference. The supplies provided equate to 111292.5 man-days of rations. Since Brian had approximately twenty-one days left in his expedition, the supplies he purchased would have supported an army of approximately 5,300 warriors. While these numbers seem high, if Brian had to provide for the camp followers that inevitably accompany any army[136] the number of effective fighters falls to 3,533.[137] While a surprisingly large number, it must be noted that the expedition included the men of Munster, Connacht, and Leinster, as well as Viking allies.

This chapter has outlined how the Irish sustainment system differed from that of other medieval armies. The lack of a developed road network that would have challenged forces used to relying on bulk grain for rations found a nearly perfect match in Irish agricultural practices. Dairying provided a diet of milk, cheese, butter, and curds as well as meat from the calves born each year. Most of these calves were allowed to grow for 12 to 18 months before they were slaughtered for meat at home, or used by soldiers as rations. By using beef on the hoof instead of bulk grain to feed their armies, Irish kings simplified their logistical concerns as cattle could travel on roads that carts could not. Cattle also could move cross-country. The preparation of meat required only a sharp knife and a fire where making bread required the establishment of ovens and the constant

---

[135] *FM 21-20 Physical Fitness Training* (Washington: Department of the Army, 1992), page 6-1. Dividing the total calories available by the calories needed to sustain one man for a day gives the number of man/days that the rations would support.

[136] Cath Ruis na Rig page 5 lists men of music and amusement who accompanied the army.

[137] Perjes, page 5. He noted that the non-effectives numbers at half again the regulars.

need for transportation to distribute the bread to the troops. Even the Scottish highland practice of making oat cakes required a horse to carry a baking stone and flour.

In a world in which most soldiers marched to battle and where roads rarely were capable of sustaining high volumes of wheeled traffic, cattle provided the flexibility needed to supply armies on campaign. As illustrated by the Craebh Tulcha example, cattle could provision a significant force, albeit for a limited time. Large armies required large numbers of cattle and this was the only drawback to the system. The dairying economy could only produce so many animals for slaughter each year. While grain could be stored, the pastures of Ireland limited the number of animals that could be supported at any particular time. As long as the amount of time spent on campaign and the size of the armies remained relatively constant, the economy could provide enough cattle for rations. But to man large garrisons permanently, or keep an army in the field would require an increased reliance on grain and an improved transportation system for moving those stocks.

The Effect of Change

Previous chapters have outlined the logistical apparatus used by Irish rulers for centuries. Each campaign appeared to start from scratch, with the king building alliances using specific ad hoc arrangements for troops and supplies. Operations were limited in scope and long term planning meant looking to the next year. One man, Brian Bóru, king of the Dál Cais from 976 AD and high-king from 1002 AD to 1014 AD, looked outside of Ireland for models of success, instituting a series of changes that dramatically affected the strategic situation on the island. The continental model introduced by Brian Boru involved a fundamental shift in perspective. Planned operations formed part of a coherent strategy that contrasted sharply with the previous tendency to rely almost entirely on taking advantage of opportunity. Brian created opportunity, he did not wait for it. His sweeping changes resulted in a pace of operations that no other contemporary king, or combination of kings, could match over time. The increased flexibility inherent in the continental model adopted by the Dál Cassian king enabled him to act and respond more rapidly than his opponents. This advantage led to the establishment of what has been described as the first high-king of Ireland with the power to enforce the claim of authority.[138]

Before turning to the challenges faced by Brian mac Cennitag mac Lorcan, a quick overview of the military situation in Ireland is appropriate. Brian's reign came at a time when Irish warfare and violence had settled into a fairly regular pattern. Irish kings tried to avoid pitched battles or wars of annihilation. A more preferred form of conflict consisted of endemic and localized violence. Cattle raiding and harrying opponents to

cause hardship forced their enemy to capitulate in the face of unacceptable deprivation. Overlordship of a territory laid waste added nothing of real value to a kingdom and thus destruction was avoided whenever possible. The simple fact that few kings could raise a sufficient force to destroy their enemies utterly also contributed to the limited nature of Irish warfare. Conquest required cooperation and support. Shifting political alliances and political intrigue caused frequent changes in the precarious balance of power that enabled kings to rise to overlordship of others but rarely led to outright subjugation. Thomas Charles-Edwards noted that war (in the era from the fall of the Roman Empire to the millenium) was "distinguished more by the strategies adopted by the principal rulers than by the technology of war."[139] While rulers often accepted the overlordship of other kings, they looked for opportunities for self-aggrandizement, breaking their vows of loyalty as soon as advantage presented itself. Long lasting relations and alliances, such as that between the northern and southern Uí Neíll, did develop but within these regional unions existed a constant jockeying for position. Onto this turbulent scene arrived the Dál Cassian king, Brian Bórumha.

At first, the new king faced almost insurmountable challenges. Unfriendly kingdoms surrounded the Dál Cais: Connacht to the North; the Éoganachta, traditional kings of Munster, to the East; a hostile king Máelmuadh to the South; and the Vikings of Limerick squarely in the middle of his territory. In addition, the Shannon River provided ready access to any fleet bent on raiding along the river's banks. The Dál Cais had little wealth and even less political clout with which to establish or maintain authority. As a small

---

[138] D.A. Binchy, *Celtic and Anglo-Saxon Kingship* (Oxford: Clarendon Press, 1970), page 44.
[139] T.M. Charles-Edwards, "Irish warfare before 1100," in *A Military History of Ireland*, eds. Thomas Bartlett and Keith Jeffery (Cambridge: Cambridge University Press, 1996), page 27.

kingdom, other kings had little to fear from the Dál Cais. A brutal example of this was the murder of Mathgamhain, Brian's elder brother and king of the Dál Cais until 976. Mathgamhain was captured while travelling under the protection of the Bishop of Cork. Such an assurance of safety should have prevented Máelmuadh from committing such an act. Máelmuadh was encouraged to release the king of Dál Cais but, fearing no reprisal from the Church or the Dál Cais, the son of Bran executed Mathgamhain.[140] Words and assurances proved ineffective in the face of reality. Even the protection of the Church could not guarantee safety if a ruler did not have the strength of arms and powerful political connections to enforce it. To change this situation and bring the Dál Cais to a position of respectability and authority would require a shift in thinking.

Potential kings raised in the Irish world were not encouraged to break with tradition. The rígdomna[141] were fostered out and brought up in a culture that regarded individual prowess and courage as critical to the measure of a man. Battle provided the opportunity for displays of heroism and the training of future leaders focused heavily on military games. Boys played with toy javelins and shields, wrestled, and participated in games of hurley. They learned to value poetry - the realm of heroes – and also studied tactics as they competed at fidchell – an Irish version of chess.[142] Exposure to other cultures and ways of thinking did not enter into the education of a future king. They were bred for war.

---

[140] *Cogadh Gaedhil re Gallaibh*, Translated by James Henthorn Todd, (London: Her Majesty's Stationary Office, 1867; reprint, Wiesbaden: Kraus Reprint Ltd., 1965), pg 91. Hereafter referred to as *CGG*.
[141] A term used to refer to those who possessed kingly qualities i.e. the correct lineage and no mjor physical disabilities.
[142] Gantz, page 136.

Brian Bóru, the fifth son of a minor king, did not share in this education. Like Alfred of Wessex, he was sent to the Church for fosterage.[143] At a later point, Brian might become an asset for his brothers to use to gain control of local churches, making alliances similar to those between Armagh and the Uí Neílls or Emly and the Éoganachta, albeit on a much smaller scale. With the death of two of Brian's older brothers, Echtigern and Donncuan in 944 AD,[144] the succession potentially was in doubt. One brother, Marcan was already fully committed to the Church. That left only one member of the family alive to hold the crown, a risky prospect to say the least. Brian left the Church and returned to his brother Mathgamian's side in his struggle to rid the Dál Cais of the plague of raiding Vikings. Brian brought with him an ability to think in terms radically different from his brother and other Irish nobles. His education, quite possibly at the monastery school of Saint Finnbar near Inisfallen,[145] had exposed him to the lessons of history, and he took advantage of them. Realizing the futility of continuing to fight in the same manner as his ancestors, Brian made the initial steps toward a new manner of organizing for war. The actual manner of fighting did not change, but he altered the foundation.

Reducing Viking access to the Shannon River became the critical first step in Brian's new logistical plan. The Scandinavians represented his greatest threat to internal cohesion. The lands of the Dál Cais straddled the river. As long as the waterway remained open, raiders could filch cows and kill people at will. A king's logistical base was the territory that he controlled. The king must husband his limited resources – cattle

---

[143] For the story of Alfred's youth and Church education see Asser, *Alfred the Great*, ed.by Simon Keyes and Michael Lapidge (London: Penguin Books, 1983), chapter one.
[144] T.W. Moody, F.X. Martin, and F.J. Byrne, ed., *A New History of Ireland*, vol. IX (Oxford: Clarendon Press, 1984), page 137.

and people. Brian countered this threat using a technique proven effective in Francia as well as Wessex. He blocked the river with a fortified bridge, presumably at Killaloe, located in a narrow stretch of the Shannon below Loch Derg with rising hills to the east and west. Circumstantial evidence makes a strong case for this location. Keating credits Brian with the building of the fortress Kincora.[146] The *Cogadh Gaedhel re Gallaibh* lists Brian as the erector and benefactor of the church of Cell Dálua.[147] According to John Bradley, these two sites sit within 600 feet of each other on the shore of the Shannon forming a triangle with a bridge as the third point.[148] The relationship between the fort and the church, with the fortress built in a dominating position on the hill, gives every indication that the two were built simultaneously and far before the completion date given in the Annals of Inisfallen for the two sites of 1012.[149] For example, Brian sent the messenger Cocarán to stop Máelmórda who had left Kincora after an altercation with Brian's son Murchad. In a fit of anger, Maelmorda struck Cocarán, killing him. The encounter took place at the east end of the bridge at Killaloe in 1013.[150] This reinforces the idea that the bridge existed far earlier than the mention of its construction (reconstruction?) by Brian's grandson Tairdelbach in 1071.[151]

Such sources do not allow for precise dating, but the rising influence of the Church of Killaloe in the late tenth century suggest that it existed for much of Brian's kingship.

---

[145] Vicenzo Berardis, *Italy and Ireland in the Middle Ages* (Dublin: Clonmore and Reynolds, 1950), page 56.
[146] Geoffrey Keating, *The History of Ireland*, Vol. III, ed. and trans. By Patrick S. Dinneen (London: Irish Texts Society, 1908), page 263.
[147] CGG, page 141.
[148] John Bradley, "Killloe: A Pre-Norman Borough?" in *Peritia* 8 (1994), page 170.
[149] AI, page 183. Bradley does not argue this point intentionally but his description of Cell Da Lua strongly suggests the possibility. See specifically pages 174-175.
[150] CGG, page 145.
[151] AI, page 227.

Bradley noted the year 991 A.D. as the first direct reference to Killaloe.[152] Grabowski and Dumville cite Killaloe as a strong possibility as the source for the composition of the *Annals of Inisfallen* beginning in 991 also.[153] If so, the church would have had to have been established long enough for the scriptorium to begin functioning to fulfill this role. A final clue, the fact that no Viking activity was recorded along the Shannon from 978 until after the death of king Brian, suggests that something stopped the Vikings. Put together, this evidence provides a pretty solid case for Brian's use of a fortified bridge, garrisoned by men provided by the Church of Killaloe, as the reason.

Blocking the Shannon at this point denied it to anyone coming up from the coast. The terrain did not allow for the portaging of boats and so Killaloe served as a choke point. Whoever controlled it controlled the Shannon. Since building a bridge alone would not stop the Vikings, the bridge had to be defended to remain effective as an obstacle. Useful comparisons are provided by the Burghal Hidage in England – here Alfred and his successors assigned towns the responsibility of providing a permanent garrison of a specified size for each fort in the network - as well as in Francia, where Charles the Bald had ordered different monasteries to garrison fortifications near them. In Ireland, Brian would learn to do the same. At Killaloe, the monastery sat as the third point of a triangle, with the bridge and the fort of Kincora completing the figure. By tying the church and its properties to the maintenance of the garrison, the king assured himself that the river would be closed to his enemies while he still had all of his own resources, including his household troops and his cattle plus tributes, available.

---

[152] Bradley, page 175.
[153] Kathryn Grabowski and David Dumville, *Chronicles and Annals of Medieval Ireland and Wales* (Woodbridge: The Boydell Press, 1984), page 73.

Control of the Shannon gave Brian Boru access to a 'road' unused by Irish kings for centuries. Not just any road, but one of a quality that could support large volumes of traffic at high speeds. A potential user had to have the means to use it, however. The Irish had been building boats for centuries. In the post-Roman period they had dominated the Irish Sea, raiding the coasts of England in their coracles.[154] These small boats facilitated the ferrying of men from Ireland to Scotland and Wales and the movement of slaves in the opposite direction. They presented nowhere near the quality or variety of boats produced by the Vikings, certainly affecting the usefulness of waterborne transport at the time.[155] For example, in 913 A.D. the Vikings defeated "a new fleet of the Ulidians on the coast of Saxon-land, where a great many were slain."[156] In this instance, the Ulstermen were using ships to cross the Irish Sea, not to navigate the rivers of Ireland. The increasing military strength of the Anglo-Saxon kingdoms of the sixth and seventh century caused the Irish to look elsewhere for raiding opportunities, resulting in a much reduced Irish naval presence afterwards.[157] With the potential profits from slave raiding reduced by the hazards of conflict with the rising military powers in England, the Irish kings looked to internal political conflicts instead of across the sea. As such they would not represent a naval power again until Viking towns in Ireland fell under Irish control in the tenth and eleventh centuries.[158] Where Charles-Edwards' argument on seapower shows some weakness is in the use to which Irish kings put those naval forces. He focused on naval warfare, citing several examples from the annals to

---

[154] Charles-Edwards, page 27.
[155] Griffith, pages 89-104. This section is an excellent explanation of Scandinavian naval technology and the flexibility available to them.
[156] AU, Vol I, page 427.
[157] Charles-Edwards, page 43.

support his case. Naval combat, however, is a byproduct. The true value of naval power rests in its logistical implications. Ireland is covered in a vast, navigable system of waterways. If one king developed a portion of that system and the other kings saw its value, they to would want to have access to this transportation network. As more kings tried to gain access and then control, conflict appeared almost inevitable. Brian Boru began this competition and through his lifetime, the Dál Cais dominated it.

Once Brian had denied the Shannon to the Vikings, he needed competent shipbuilders and financing to develop his own fleet. He quickly turned his attention to Limerick. The Viking town proved vital to the Dál Cais for a variety of reasons. When Brian had succeeded to the kingship, the economy of the Dál Cais was primarily rural. He had no towns or large monastic communities that could serve as centers for commerce. In contrast, the Uí Neíll kings of Mide had the monastic towns of Armagh and Clonmacnoise as well as the Viking town of Dublin to stimulate trade. Kelleher argues that the initial rise of the Dál Cais from obscurity came about due to military aid provided by the Uí Neíll kings.[159] Independence would come only with access to international commerce, allowing the Dál Cassians to trade their surplus agricultural products for imported goods such as crafts, metals, and a variety of consumables not produced in Ireland. Such exchange could lead to a growth in wealth and contribute, in turn, to an increased standard of living, purchase goods of war, and attract artisans and warriors. Limerick not only gave Brian access to trade, but also a new pool of manpower. After spending several years consolidating his hold on Munster, Brian's new allies began to

---

[158] Charles-Edwards, page 27.
[159] John V. Kelleher, "The Rise of the Dál Cais" in *North Munster Studies*, ed. Etienne Rynne (Limerick: The Thomond Archaeological Society, 1967), pages 230-241.

make their presence felt. The first reference to his use of a fleet dates to 983 when "A large fleet [was brought] by Brian, son of Cennétig, into the territory of Connachta."[160] Within five years Brian's fleet had grown. In 988 the annals record "A fleet, viz. 300 boats, [was put] on Loch Rí by Brian, and they harried Mide and went to Uisnech. And twenty-five boats of these went into Connachta."[161] The role of the river in Brian's success became apparent to the other Irish kings. To deny the river to the king of Munster, "The causeway of Áth-Luáin [was made] by Máelsechlainn, and by Cathal son of Conchobar."[162] The defeat of the combined forces of Connacht and Meath resulted in the submission of the Connacht king in 1001[163] and of Máel Sechlainn in 1002.[164]

Such a success at Killaloe reinforced the value of the program. During his reign Brian built or rebuilt over a dozen forts, all located near either a religious establishment or a Viking town. These forts defended key terrain, denying his enemies unimpeded approaches into the kingdom of Munster and serving him as staging areas for offensive operations. After gaining control of both Limerick and the lower Shannon, Brian turned his attention southward. A quick look at the map (Appendix A) shows the systematic nature of the king of Dal Cais' attentions. His fortifications at Ceann Abhrad, on the border of Cork, Duntry League, and Bruree blocked major avenues of advance into the realms of the Dál Cais. Along with establishing defenses protecting the territory of Mumha against the encroachments of the kingdom of Desmumu, Brian blocked the river Suire with a fortification at Dun Iascaig, thus preventing the Scandinavians of Waterford

---

[160] AI, page 165.
[161] AI, page 167.
[162] AU, Vol I, page 509.
[163] CGG, page 133.
[164] Moody, Martin, and Byrne, Vol VIII, page 47.

from raiding into the lands between Cashel and Limerick. New defensive works at Dungrod and the rebuilt walls of Cashel protected Munster from incursions from the east out of Leinster and Ossory as well as reinforcing the defenses of the south.

Brian's new works served for more than just a line of defense. They also served as bases from which he launched campaigns throughout Leth Mug over the next eight years. In 978 he defeated Máelmuadh of Cork and secured the hostages of the remainder of Munster. He then proceeded, in all likelihood from his base at Dún Iascaig, to ravage the Deisi and Waterford, both of which submitted to him. Control of the Viking town at Waterford increased Brian's access to international trade as well as additional access to Viking warriors and ships, both of which proved critical in his later operations on the Shannon. His intensive campaigns continued with the subjugation of Ossory and of Leinster by 986.[165] It is worth noting that in each of his early campaigns, Brian located a fortification near the border of the territory he intended to attack. These bases were not situated back in inaccessible areas as one would expect if they were only meant to be of a defensive nature.[166] Brian did not intend for them to serve as shelters for his people to flee to and hide their cattle during raids. Rather, each was situated along a major avenue of approach, serving both to block an enemy as well as provide an excellent jumping off point for campaigning.

The *Book of Rights* lists dozens of strongholds built by previous kings of Cashel throughout Munster.[167] The difference between these constructions and those of Brian Boru lay in the systematic placement of Brian's defensive works. He intended his works

---

[165] *CGG*, pg 107.
[166] John H. Beeler, "Castles and Strategy in Norman and Early Angevin England," *Speculum 31* (1956), page 592.

to provide more than just a refuge in times of attack. They served to block access by potential invaders or if unsuccessful in that role, to provide some warning of an attack, buying time for the king to muster his forces. These strongholds also gave the king a staging area right on the flank of his enemies' lands. Brian could move right from the muster into the attack without having to weary his army with negotiating the terrain within his own kingdom before they set foot on hostile soil. His men thus began the campaign fresh, with a full complement of supplies.

These building projects cost a great deal of money. No Irish king had the wealth to be able to embark upon any serious construction projects.. Brian realized this and actively sought to alleviate the problem. Early in his reign he targeted the Viking trading towns of Limerick and Waterford. International trade, and more importantly money, would enable him to accomplish what no one else had before. Gold and silver, an improvement over payment in kind, gave him great flexibility.

At least one of Brian's building projects had little to do with the physical defense of Munster but a great deal to do as a base of supply from which he launched many of his later campaigns. His fortification at Loch Cé gave Brian control of the upper reaches of the Shannon River. Loch Cé meant the denial of the Shannon to any force coming from the North and thus had a limited defensive role to play. Far more importantly, Loch Cé meant that Brian had a base of operations at the edge of the Northern Uí Neíll lands, a secure point from which to attack into Argialla and Cenél Conaille and beyond. According to the *Annals of Inisfallen*, in 1006, Brian mustered the men of Leth Mug and "[came] to Ath Lúain, went to Es Ruáid, proceeded across it northwards, and made a

---

[167] Myles Dillon, *Lebor na Cert: The Book of Rights*, (Dublin: Irish Texts Society, 1962), pages 43-47.

circuit of the north of Ireland including Cenél Conaill, Cenél Eógain, Ulaid, and Airgialla."[168] While this passage does not refer specifically to Loch Cé, the route between Athlone (midway up the Shannon) and Es Rúaid (Assaroe on the River Erne in Donegal), runs right through the upper reaches of the Shannon River and Loch Cé. The circuit that began with the Cenél Conaille just north of the stronghold proceeds around in Uí Neíll territory to return to Loch Cé from the East out of Airgialla. Another reference in the Annals that reinforces the claim of Loch Cé as Brian's jumping off point for his campaigns against the Northern Uí Neíll comes in the year 1011. The Annals state that "A great muster of the men of Ireland by Brian, son of Cennetig, into Cénel Conaill...and carried off much booty to Mumu; and Brian *came after that to the lake.*"[169] Seán mac Airt in his notes states that "probably the Shannon near Limerick is meant."[170] More likely is that the 'lake' was Loch Cé, where Brian had placed his fortifications. His troops could return to this supply point from which he then could arrange for their dismissal and ship plunder down the river to Munster.

Nearly simultaneous with his physical construction projects was Brian's development of an infrastructure of religious support that he would call upon for administrative tasks within his rapidly expanding kingdom. When he assumed power, the Dál Cassian king had little support from the powerful churches of Ireland. The Church represented probably the most organized body within Ireland. Large Churches at Armagh, Kildare, and Emly, just to name a few, had subordinate churches spread throughout Ireland. The head churches received a portion of the wealth from each church within its paruchia and

---

[168] *AI*, page 179.
[169] Ibid., page 181. Italics are mine.
[170] Ibid., page 181.

administered their property as efficiently as any king in the land. Irish kings did have at least a rudimentary form of administration most notable in their use of stewards. In 923 A.D. mention was made of "Muiredach son of Domnall, tanist-abbot of Ard-macha, and high steward of the Uí Neíll of the South."[171] Whether the development of Irish stewards came as a response to the Viking practice of stewardship,[172] is difficult to tell. More likely, it imitated the Frankish maior domus. The kings did make efforts to ensure the collection of tribute and manage their resources. Brian took this much farther, however, using the advantages of organization and administration presented by a close alliance with the Church. Initially, he secured the support of the southern clergy in the same manner that he assured the support of the kingdoms he conquered - he took hostages to facilitate their cooperation.[173] In 986, he removed the Abbott of Emly and replaced him with an anchorite from Munster. In 990, Brian's brother Marcan became abbot. At this point in his career, it seems safe to assume that Brian now had the full support of the fourth strongest church in Ireland.

So what benefits accrued to Brian from the support of the churches in the south? A map of Brian's defensive works and a map of the churches in Ireland illustrates an interesting coincidence; nearly every one of the king's new fortifications was located near a church. Dún Iascaig blocking the River Suire was located close to Cahir, Ceann Abhrad in the south found Ardpatrick close by and the Tuaim Greine Tower was right next to the monastery at Tuamgraney. In addition to the abbacy of Emly, located near the recently renovated defenses at Cashel, Marcan also held the abbacies of Killaloe,

---

[171] AU, page 447.
[172] CGG, pages 49, 85.
[173] Ibid., page 167.

Terryglass and Inis Caltra. Both the churches of Inis Caltra and Killaloe are attributed to Brian.[174] If a religious establishment was not close to an intended construction site, the Dál Cassian king built one. While the church at Inis Caltra had no new fortifications nearby, it easily could have been a contributor to supplying the base at Loch Cé as well as a supply point enroute up the river. The importance of the proximity of Brian's strongholds to churches cannot be dismissed readily. The strongholds provided the church with a valuable commodity: defense. Equally valuable in return, the church's ability to collect provisions from their lands and tithes supplied the garrisons with the food they needed to survive.

Once Brian expanded outside the paruchia of Emly he needed to seek the support of a northern church if he intended to continue to reap the benefits of good relations with the clergy. In 1005, he cemented his ties with the most influential church in Ireland - the See of Patrick at Armagh. Recent research has shown that while Armagh had great prestige and religious authority within Ireland, it constantly needed hard currency.[175] In 1005, Brian visited Armagh after the death of the bishop, Aedh, "Brian left twenty ounces of gold [as an offering] upon the altar of Ard-Macha.[176] After that, Brian regularly began his campaigns into the north of Ireland with musters at Armagh, instead of Munster. In the

---

[174] Geoffrey Keating, *The History of Ireland*, Vol. 3, Trans. and ed. by Patrick S. Dinneen, (London: Irish Texts Society, 1908), page 263.

[175] Jessica Banks, derived from a multitude of informal discussions about her research into the relationship between St Brigt and St Patrick as evidenced in the various versions of their lives. She suggests that relations between the two churches continued to warm throughout the Early Middle Ages as the See at Armagh sought to tap into the wealth of Kildare and the See of Kildare attempted to increase their legitimacy through closer ties with the patron saint of Ireland.

[176] *Annals of the Kingdom of Ireland by the Four Masters*, Vol. 2, trans. and ed. by John O'Donovan, (Dublin: Hodges, Smith, and Co.,, 1856), page 753. Date given is out of T.W. Moody , F.X. Martin, and F.J. Byrne, ed., *A New History of Ireland*, vol. 8, (Oxford: Clarendon Press, 1982), page 47 since the AFM incorrectly place the gift in 1004. It is interesting to note the addition of the phrase [as an offering] by the

year 1007 A.D., "A great muster of the men of Ireland, both foreigners and Gaedil, by Brian to Ard Macha, and they took the hostages of Ulaid…by force."[177] Again in 1010, "A great hosting of the men of Mumu by Brian against Ua Neíll, and it came to Ard Macha."[178] After 1004, the king of Munster used the Church of Armagh as a staging area in a manner quite similar to the way in which he used the border forts he had built in order to subjugate the south. By actively promoting the interests of the See of Patrick, both by proclaiming it the preeminent church of Ireland as well as his healthy cash contribution, Brian gained an ally in the central region of Ireland, giving him a staging area to muster and resupply prior to launching campaigns into the northern territories to which the Shannon did not give him access.

---

four masters, almost as if they wanted to make sure that no reader 'mistakenly' assumed the gold might have been a bribe to induce cooperation.

[177] AI, page 179.

[178] AI, page 181.

The Models of Alfred the Great and Charles the Bald

Does Brian Bóru's system of fortifications reflect a construction program found elsewhere in Europe? The similarities between Ireland in the late tenth century and Wessex in the mid-ninth century are striking. When Alfred became king in 871, Vikings had pummeled his lands. The Danish 'Great Army' had entered Wessex and plundered and destroyed almost at will. Warfare had drained the resources of Wessex, both in men and in money, leaving the kingdom ripe for external forces to pluck. Alfred also faced competing claims from his nephews as well as pressures from the neighboring kingdom of Mercia.[179] The response of the two kings to these pressures bear similarities that are too close for mere coincidence.

While Brian spent the first eight years of his reign on the offensive, Alfred had to content himself simply with fending off his foes. Using diplomacy, bribery, and guerrilla warfare, Alfred managed to survive. In the 880s the Vikings focused their attentions on the continent and the king of Wessex began the construction of a series of fortified towns detailed in the financial document known as the Burghal Hidage. According to Asser, Alfred "carefully and cleverly exploited and converted his bishops and ealdormen and nobles...to his own will and to the general advantage of the whole realm...that is, with respect to constructing fortresses and to the other things of general advantage to the whole kingdom."[180]

The Anglo-Saxon Chronicle provides evidence for the success of Alfred's ambitious fortification strategy. The Chronicle relates as much about what does not happen as what

---

[179] Asser, *Life of King Alfred,* trans. and ed. by Simon Keynes and Michael Lapidge, (London: Penguin Books, 1983), page 18.
[180] Ibid., pages 101-102.

does. Prior to the Burghal Hidage system, the fleets and armies of the Danes had nearly free reign when they descended on Wessex. The West Saxon kings called out the fyrd and attempted to pin down the Danes in order to give battle, but Viking mobility negated most of these efforts. Examples of this freedom of movement abound. In 860 the *Chronicle* relates that "in his day [King Aethelberht] a great raiding ship army came up and destroyed Winchester."[181] The Viking fleet came up the river and attacked the town with seeming impunity. The record makes no mention of the townsmen fighting back or even of a relief force arriving anywhere near in time.

Again in 870, a Viking force, this time a great land-based army, raided Reading. Within days, the jarls of the force had continued on into Wessex. This time, the West Saxons did react. The Chronicle relates that "later King Aethelred and Alfred, his brother, fought on Ashdown against the whole raiding-army."[182] The rough year continued with the raiders hitting Basing and Merton in 871. At almost the same time, a "great summer fleet arrives."[183] This fleet strikes the town of Wilton and then sails away. The years 875 and 876 brought a return of the seaborn raids, first at Wareham in 875 and then Wareham again in 876. The second fleet proceeded from Wareham to Exeter and plundered that city with abandon. Alfred saw and experienced the devastating effects of the mobility of the Scandinavians. He also realized the ineffectiveness of the West Saxon responses.

---

[181] *The Anglo-Saxon Chronicle*, trans. and ed. by Michael Swanton, (New York: Routledge, 1998), page 68. Hereafter referred to as *ASC*. All references from the *ASC* refer to the 'A' manuscript unless otherwise noted.
[182] Ibid., page 70.
[183] Ibid., page 70-72.

The long list of raids provides an important insight into the developments of the next decade. Many of the towns hardest hit by the Danes during the life of Alfred became fortified strongpoints in his defensive strategy designed to take away the key to the Vikings' success: their mobility. Like his father-in-law Charles the Bald, Alfred saw the need to deny the rivers and inland waterways to the Vikings. Inland fortifications at strategic points within the kingdom gave him the ability to cut the enemy's lines of communications as well as forcing him to keep his forces together. If the Scandinavians dispersed, the West Saxons could cut them off and deal with them in small groups.

Alfred did much more than just mimic the defensive works of the continental king, however, he made improvements to it. The system developed by the West Saxon King, and described by the Burghal Hidage, assigned specific responsibilities to land holders for maintenance and upkeep of the fortifications. What Alfred did however was to locate his new strongholds at specific locations. He used them to deny strategic terrain or avenues of approach to the Vikings.

The map of Wessex (appendix two) shows the strategic plan of Alfred. Towns and rivers that had been favorite targets and routes of the Scandinavians now had defenses blocking access. Two entries in the Anglo-Saxon Chronicle serve to illustrate the effectiveness of the new defenses. In 893, a Viking fleet from Northumbria sailed south and besieged the region of Devonshire closest to the Bristol Channel. The annalist mentions nothing about the ravaging and raiding which had filled the entries just a decade previous.[184] The Chronicle relates that the next year "when the raiding-army which had besieged Exeter turned back homewards, they raided up in Sussex near Chichester, and

the garrison put them to flight and killed many hundred of them."[185] The Anglo-Saxons inflicted a defeat without the army of the king! Twice denied and once defeated, the Vikings limped back home to lick their wounds. While these entries showcase the effectiveness of the Burghal system in protecting the sovereignty of the realm, they also mention another critical factor in their success: the creation and use of permanent garrisons.

The Anglo-Saxon Chronicle relates that in 893 two Viking armies entered Wessex and the king moved to intercept them. As the annalist described the composition of Alfred's army, he refers to warriors who did not accompany the king into battle by stating that "They [the Vikings] went through the forest in gangs and mounted groups...and almost every day they were sought by other groups both from the army and also from the strongholds...except those men who had to hold the fortresses."[186] A specific group of men garrisoned the fortifications. The walls were no longer just a place of refuge to which people fled in times of crisis, instead, they were continuously manned and placed where they would disrupt any hostile offensive entering Wessex. The question then becomes how did Alfred manage to finance permanent defenders?

The 'A' manuscript of the Burghal Hidage gives the answer to the question of providing support for the fortresses. According to Nicholas Brooks, "The construction or repair of fortifications as a defence against Vikings was not a new policy in the reign of Edward the Elder, or even of Alfred. Boroughwork...was a general public obligation in

---

[184] Ibid., page 86.
[185] Ibid., page 88.
[186] Ibid., page 84.

Anglo-Saxon England."[187] Land in Alfred's realm had been divided up into administrative units, called hides. Landowners owed service and taxes based upon these divisions. Alfred used the obligation of landowners differently from his predecessors. He took a general obligation held by all property holders and converted it into specific responsibilities. Each of his projects was assigned the number of hides required to provide for the repairing and manning of that project. The Burghal Hidage states that "For the maintenance and defence of an acre's breadth of wall, sixteen hides are required: if every hide is represented by one man, then every pole can be manned by four men."[188] Having analyzed the needs of each fortification as far as upkeep and garrison size required, the king of Wessex then assigned each hide of land in his realm to the support of its own defensive work. Along with the planning of the division of labor and resources, Alfred required an administrative system capable of ensuring the execution of the plan.

Like Brian Boru years later, Alfred turned to the most organized hierarchy available - the Church. Alfred had always been a very pious and religious man. His devotion certainly endeared him to the Church, thus facilitating his use of religious men in the administration of his kingdom. Obviously, a plan of this complexity required written records. The Burghal Hidage itself proves this point quite well. Along with written records, Alfred needed men who could assist in the management of his program. Like Brian Boru (who quite possibly took note of Alfred's works), the West Saxon king located each of his fortifications near a religious establishment. If there was no church

[187] Nicholas P. Brooks, "The Administrative Background the the Burghal Hidage," in *The Defence of Wessex: The Burghal Hidage and Anglo-Saxon Fortification*, ed. David Hill and Alexander R. Rumble (Manchester: Manchester University Press, 1996), page 129.

nearby, Alfred endowed one. Asser noted that Alfred called monks from many nations to his newly established monastery at Athelney,[189] conveniently located near two fortresses previously built by the king.

Even Alfred seemed to look elsewhere for a model. The most commonly cited example is Charles the Bald. Intermarriage between the two lines certainly helped in making available to Alfred knowledge of the situation in the Frankish kingdoms. Entries in the Anglo-Saxon Chronicle show an awareness of events outside of England. For comparison, the Chronicle has thirteen entries dealing with Rome in the ninth century and forty entries over the same time for the West Franks. Hassall and Hill state that a "clear knowledge of the doings of the Carolingian house is displayed."[190]

Like Alfred and Brian, Charles the Bald faced difficult times when he became king. Like the other kings who followed him, Charles also had to deal with a fractured kingdom, that of his grandfather, Charlemagne. Vikings ravaged his lands almost unimpeded and rival factions of nobles, including his brothers, fought to weaken his rule, challenging him for dominance within his own domain. Charles responded to these threats with a defensive strategy designed to facilitate control within the boundaries of his kingdom as well as possibly provide a base of operations for future offensive action. Charles' defensive strategy consisted of three connected parts: first, a series of fortifications that would deny his enemies mobility within his lands as well as serve as staging points for offensive operations; second, close links with the only organization

---

[188] Asser, page 194.
[189] Asser, pages 102-103.
[190] J.M. Hassall and David Hill, "Pont de l'Arche: Frankish Influence on the West Saxon Burh?" *The Archaelological Journal* 127 (1970), page 190. Misspellings (knowledge and Carolingian) in the original are corrected by me in the quotation.

with sufficient resources and structure that could provide him administrators and clerks - the church; and finally, a much more involved financial plan than any of his predecessors had developed that would ensure the funds, raw materials and labor required to accomplish all of Charles' projects. Other kings looked to his successes in shutting down the Viking marauders in his lands and sought to imitate him in his construction planning and strategic use of the Church. Modern readers might recognize the adage that 'imitation is the most sincere form of flattery' and it most certainly applied. While the kings of Wessex and of Dál Cais would modify and adapt Charles' model (as well they should have), his strategic vision gave them the archetype they so desperately needed.

Charles worked diligently to strengthen his ties with the clergy and with the Church as an organization. When appointing bishops and abbots, he often chose his candidates from outside the region where the benefice was. For example, he appointed the Irishman Elias to Angouleme and his personal cleric, Wulfad, to the Archbishopric of Bourges. By Neither man had local ties or family connections meaning that they had to rely on the king for support. In return, both would support Charles throughout his reign as well as seeing to the construction of defensive works in the late 860s under Charles' orders.[191] By using outsiders he strengthened their bond to him. He was the patron from whom they had gained their new seat and also separated the new head of the establishment from any local family ties. Charles thus replaced local dominance of the Church with an increasing reliance on himself. Like Brian and Alfred, he built religious establishments at critical points in his kingdom. For example, on his northeastern frontier, he not only built fortifications but also "he built St Mary's Church at Compiegne...staffed with one

hundred clergy, was endowed with land, gold, silver, precious stones, and vestments."[192] Everything that the church would need to support the defenses located right next door.

The king of the West Franks became heavily involved personally in the affairs of the church as well. Besides appointing family members to a variety of positions within the religious orders, Charles himself became lay abbot of St. Denis in 867.[193] His annual participation in the Good Friday liturgy provides evidence of his relations with that house.[194] Janet Nelson noted that "there is no sign that the abbey suffered materially during the next decade...It was during these years that the abbey was fortified, while, at the same time, its scriptorium and workshops reached an apogee of skill and output."[195] The king gained access to the resources of the church, and the church gained access to the power of the king.

The relationship between Charles and the Church was not one-sided, both benefited. They shared a common interest in preserving territorial gains and promoting stability. Since the churches housed much of the wealth of a region, they were prime targets for Viking raids and rebels in need of money. Charles found a much needed ally in his initial years in Archbishop Hincmar.[196] Hincmar, the chronicler for the Annals of St-Bertin until 882, did his best to cast those who opposed Charles in a negative light. He begins the year 873 with the statement that "Now there were many in Charles' realm who

---

[191] Janet L. Nelson, *Charles the Bald*, (London: Longman Group, 1992), page 212.
[192] Rosamund McKitterick, "Charles the Bald & the Image of Kingship," *History Today* 38, no. 6 (1988), page 35.
[193] *The Annals of St-Bertin*, trans. and ed. Janet L. Nelson, (Manchester: Manchester University Press, 1991), page 138. Hereafter referred to as *AB*.
[194] McKitterick, page 33.
[195] Nelson, *Charles the Bald*, page 214.
[196] Janet L. Nelson, "A Tale of Two Princes: Politics, Text and Ideology in a Carolingian Annal," in *Studies in Medieval and Renaissance History*, vol. 10, ed. J.A.S. Evans and R.W. Unger, (New York: AMS Press, 1988), page 121.

expected that Carloman [Charles' son] would wreak still further evils in the holy Church of God and in the other realms in which Charles discharged the office of a king."[197] Notice that he lists the Church as the first office in which Charles held responsibility. Charles' careful control of the appointment of bishops and other religious leaders would lead to a greater collaboration between the bishops and the men of the king.

The king of the West Franks embarked upon a program of rebuilding older fortifications and of establishing new ones in order to protect his realm both from without and within. Charles, like his predecessors, had many local defensive works intended to provide refuge in case of attack and also serving to keep the peace. While this was common practice among the Franks, two new permanent fortifications, and one temporary one, are of strategic note.

The *Annals of St-Bertin* list a curious entry for the year 862. Aware that a force of Viking were moving through his realm, Charles "could not catch up with them...He therefore followed some indispensable advice and rebuilt the bridge across to the island by Tribardou, thereby cutting the Northmen's access to the way down the river."[198] Trapping the Vikings at Isles-les-Villenoy ended their raiding expedition, forcing them to come to terms with Charles. This success gave Charles the inspiration for two permanent fortified bridges that would potentially deny the Vikings passage into the Frankish realms, thus removing one of the many problems complicating his reign.[199]

The fortified bridges at Pitres and at Pont de-l'Arche were designed to block the major waterways used by Viking raiders into Frankish territory. Pitres denied the Seine and

---

[197] *AB*, page 180.
[198] Ibid., page 98.

Pont de l'Arche obstructed the Loire. The trials and tribulations Charles faced in the construction and manning of these works served as lessons learned for Alfred and Brian. Both the king of Wessex and the king of Ireland saw that, as modern military members would say, 'an obstacle not covered by fire, is not an obstacle.' Charles had completed the construction of the defenses at Pont de-l'Arche in 873. In 877 however, the Vikings went through the defenses and raided up the Loire Valley.[200] Coupland reasoned that a lack of a permanent garrison at the bridge facilitated this raid. Years of relative peace may have resulted in a decrease or elimination of the costly garrison. By 881, the problem had been permanently corrected.[201]

The issue of a costly garrison, and the provision thereof, accompanied the issue of the costliness of the construction of these fortified bridges. Pitres required the constant oversight of the king in order to mobilize the labor and financial resources required to complete the work. Carroll Gillmor notes the tremendous costs involved over the fifteen years that it took to finish the project. Timber alone would have required access to over 3,300 acres of woodland and the transportation assets to move the logs from the point of cutting to the bridge site would have included thirty teams of oxen.[202] In order to assure the availability of these resources, Charles called assemblies of his nobles at Pitres in 862 and 863.[203]

---

[199] Simon Coupland, "The Fortified Bridges of Charles the Bald," *Journal of Medieval History* 17 (1991), pages 2-4.
[200] *AB*, page 198.
[201] Coupland, page 8.
[202] Carroll Gillmor, "The Logistics of Fortified Bridge Building on the Seine under Charles the Bald," in *Anglo-Norman Studies*, vol 11, ed. R. Allen Brown, (Woodbridge: The Boydell Press, 1989), pages 94-95.
[203] *AB*, pages 100 and 118.

The Annals of St-Bertin attest to the validity of Gillmor's numbers. Charles had to focus the efforts of the entire countryside at Pitres in order to effect his project, his continuous involvement was required for the venture to succeed. Knowledge of the challenges that he faced, and often the mistakes that he made, would benefit the later kings who developed plans to overcome the difficulties that beset the king of the West Franks.

Were the military strategies of Alfred and Charles the Bald exported to Ireland? Did Brian base his defenses on the model of Charles the Bald and, if so, how did the model pass from the continent to Ireland? No concrete answers exist. One possibility is that the Vikings brought about their own fall. Word of Charles' blockade at Pitres and of Alfred's successes with his blocking of river access in Wessex to the Danes surely made its way throughout the Scandinavian trade diaspora. Traders and pilgrims plied the waters between Ireland, England, and France and thus offer one potential explanation. Another possible route is through the church. Irish scholars journeyed abroad and many continental houses welcomed them. John Colgan noted 99 Irish Monastic foundations located on the continent and an additional 17 communities in England, Scotland and Wales. He also noted the courtesy commonly referred to as 'Irish Hospitality' that resulted from the constant travel of Irish clergymen.[204] John the Scot played an active role in the lauding of Charles the Bald's achievements, and other Irish scholars, also spent time at the court.[205] It is probable that the Irish ecclesiastical community was aware

---

[204] Vicenzo Berardis, *Italy and Ireland in the Middle Ages* (Dublin: Clonmore and Reynolds, 1950), pages 123-124.

[205] John Marenbon, "Wulfad, Charles the Bald and John Scottus Eriugena" in *Charles the Bald: Court and Kingdom*, ed. Margaret Gibson and Janet Nelson (Oxford: BAR International Series 101, 1981). In his article, Marenbon discusses the idea of a 'palace school' at the court of Charles. In addition to the Irishman

of the activities of the kings of Wessex and of Francia. Since Brian received his early education from the Church, there is a good chance that he heard of Alfred and Charles while he lived near Inisfallen. While the exact mechanics of the transfer may never be known, multiple routes existed, and the similarities between the programs of Charles, Alfred and Brian are too strong for mere coincidence.

The end of this chapter brings us back to the questions of change and external influence. Brian was the first Irish king to take full advantage of foreign influences. Other kings had made partial use of the Church as evidenced by Muiredach in 923, and all of the Irish kingdoms had had some interaction, for good or bad, with the Vikings, What the Dál Cassian king did was pull the various threads together in a logistical system modeled after that of Charles the Bald and Alfred the Great. The Carolingian king provided the method for denying the rivers to the Viking raiders which would help to stabilize a region. The rivers then became a high speed avenue of advance for Brian that facilitated the movement of supplies using Viking ships. Developing a strategic system of fortifications similar to that in Wessex, secured the borders of Brian's kingdom and gave him staging areas on the borders of his enemies' lands from which he would launch attacks. Coordinating the support of the Church for the provision of garrisons, in imitation of Charles the Bald, and tasking them to provide supplies for those garrisons, as Alfred had in Wessex, gave Brian access to a much larger permanent force than the households of his rivals. His logistical system allowed him to overwhelm the other kings of Ireland not by a new way of fighting – instead he increased the operating tempo to a

---

John the Scot, he notes the contributions of two Irish scribes known only as 'i' and 'i2' by their handwriting.

level no one else could match. Capitalizing on new technology and organization, Brian developed a new model of logistics far superior to the traditional system employed throughout the island. By using the mistakes and successes of other great kings as a basic model and then adapting them to his own situation, Brian Boru was able to accomplish what no Irish king had managed to do before him - unite the title of high king with reality.

Conclusion

The introductory chapter outlined a series of questions about whether an early medieval Irish system of logistics existed, and if so, what shape did it take? Upon examination a pattern did emerge, leading to the conclusion that the Irish did have a logistical system. Having looked at the various aspects of logistics in early medieval Ireland the question of how this system affected their manner of fighting arises. Irish kings had a method of providing troops that gave them a fair degree of flexibility. The household troops gave a degree of security for the kingdom, acting as an initial defense against invasions as well as serving as the foundation for larger forces. With relatively short notice, the king could gather the men of his territory in a sligad to repel an incursion or to mount a raid into neighboring territories. If a king planned far enough in advance, he could arrange alliances and coordinate support for a great hosting. These tinols often showed that a king commanded enough power that he would gain the submission of other kings or challenge the domination of his overlord.

In any event, the nature of the Irish force relied heavily on part-time troops. A fairly obvious consequence was the inability of the Irish to sustain an extended campaign. With military service limited to six weeks, kings did not have the time for long-term operations. Since manpower was restricted to the population subordinate to the king, loses literally took a generation to replace. There were no replacements for battlefield casualties and each encounter meant a reduction in the fighting strength of the army. Without replenishments, it proved difficult to continue a campaign beyond the first major encounter. Faced with these limitations, quick strikes on the enemy, using speed and surprise were the most efficient use of force. Raids allowed for the focusing of most of a

force at a point where the enemy was not. This increased the likelihood of victory and reduced the potential for casualties. The objective became to take some plunder, damaging the economy of an enemy, and then depart the field before he could mass his forces to respond. Warfare was thus characterized by short operations, not sieges or protracted campaigns.

The question of how the Irish moved sheds a great deal of light on the style of fighting they adopted. Ruth Edwards summed up the Irish countryside as "a country so liberally supplied with rivers, lakes, mountains, bogs, drumlins (small hills) and an inhospitable coastline [that] posed almost insurmountable difficulties."[206] The lack of high speed roads, such as the Romans had covered Europe with, meant that most long distance travel was essentially cross country. Such a mode of travel in difficult terrain is ideally suited for light infantry – those troops not encumbered by heavy armor or an extensive array of weapons. Heavy infantry required open fields in order to deploy into formations. Pikes work very poorly in, and around, trees. To conduct a successful massed charge, cavalry required open, even ground, while trees drastically reduce the range, and therefore effectiveness of archers. The contrast of rough, forested Ireland with the open fields of France and England illustrates the development of a military tradition appropriate to the region. Additionally, the light troops of the Irish possessed the mobility to negotiate the terrain with a fair degree of rapidity. The greatest challenge posed by the poor roads in Ireland was to the movement of supplies.

The question of supplying an army requires an understanding of the economy from which the army comes. Regions that rely on bread to feed peasants, such as Francia and

England, tended to use cereals to feed their armies as well. Such a source of supplies necessitated a system of transportation to move it. Since Ireland did not have the well developed roads common to most of the rest of Europe, the Irish had to look to a different source. The dairying agriculture of the Irish provided the means to overcome both the difficulty of transportation as well as that of a lack of surplus grain in the excess calves born each year. These animals moved themselves and required little preparation in order to be edible. This is not to say that the Irish did not use grain as food. F.H.A. Aalen attempted to show a balance between the two when he stated "The economy of the rath farmers was based, primarily on livestock and, secondarily, on crop growth."[207] His comments are important – cultivation of grains did play an increasing role in the Irish diet, but not as substantial a portion as that noted in the sources for the armies of England. An Irish reliance on grain as a significant form of ration would have to wait until the use of larger, Viking built boats on the rivers after the tenth century. Using the animals produced in the dairying process as rations allowed the food to travel cross-country along with the troops. It also meant that the Irish could not store up large stocks of rations in preparation for campaigning. The land could only support so many animals in an area and as such limited the provisions available each year. The restricted food combined with the limited period of service for most fighters to create a sort of maximum level which warfare could reach. This ceiling would require outside influence in order to change the face of Irish violence.

---

[206] Ruth Dudley Edwards, *An Atlas of Irish History* (London: Methuen & Co., 1973), page 33.
[207] F.H.A. Aalen, *Man and the Landscape in Ireland* (London: Academic Press, 1978), page 85. Rath describes the single family dwelling most common in this period.

Contrary to popular beliefs, the Irish were not isolated from the rest of Europe during the Middle Ages. The arrival of Christianity in the fifth century led to the exertion of an ever increasing influence by the Church. Contact with the religious institutions led to changes in the economy, agriculture and most importantly from the logistical perspective, administratively. The close association of the Church with secular leaders meant access to a body of individuals capable of managing resources. The Church officials were motivated to help secular leaders consolidate authority and at the same time expand their own control in the ecclesiastical realms.

The Viking incursions that began in the eighth century brought additional change. Viking towns linked the Irish economy to that of the rest of Europe accelerating the change from a subsistence economy to a mixed one. Viking warriors were an additional source of manpower that the Irish kings used in building their armies. Viking shipbuilding allowed for the exploitation of the vast waterways of Ireland and Viking raids up the rivers, even more importantly, motivated at least one ruler to look for a method of stopping them. The successes of Charles the Bald and Alfred the Great against similar Viking threats provided the model which would change the Irish logistical system and as a result, the political landscape forever.

Brian Bóru appears as the culmination of external influences in Ireland. His system of garrisoned fortifications, an imitation of the kings of Francia and Wessex, served as logistical staging points for his offensive operations against his neighbors. Coordinating with various churches for permanent garrisons of his defenses made raiding into Munster much more costly for his opponents, reducing the give and take that had characterized the balance of power for centuries. He solved the transportation challenges that had faced

previous kings by employing Viking shipbuilders to create a fleet that would use the Shannon as a high speed avenue into Uí Neíll territory. The high tempo of operations that Brian was able to sustain was unmatched and resulted in a high-kingship that was more than a title. His death would bring a return to the competition between the regional kings who adopted many of the elements of his logistical system bringing a return to the balance of power that had previously characterized Ireland, albeit with different families now vying for power.

This study has attempted to establish the existence of an Irish system of logistics and how it would affect their style of fighting. The Irish had adapted their manner of conflict to their environment; geography and the lack of a developed infrastructure encouraged light infantry, not cavalry. Agricultural practices motivated the manner of supply. Looking at how the Irish got to the battle instead of focusing solely on the 'glorious' aspects of combat, illuminates the complex nature of warfare in Ireland. While they did still fight with spears and shields, Irish logistics showed a carefully planned and coordinated manner of conducting operations that rivaled any other of the time.

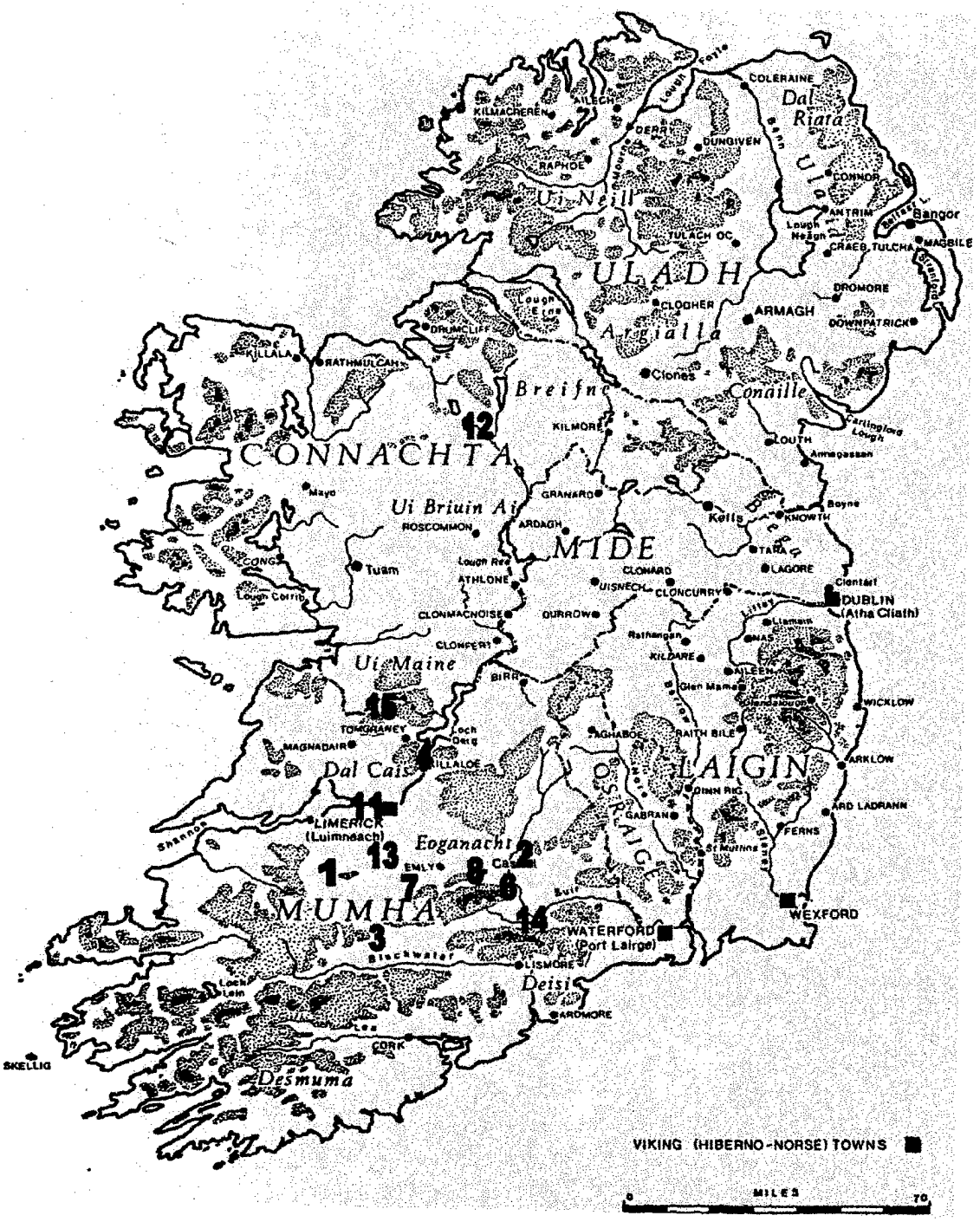
Appendix A: Map of Brian Bóru's Fortifications

KEY TO FORTS LISTED ON THE MAP[1]

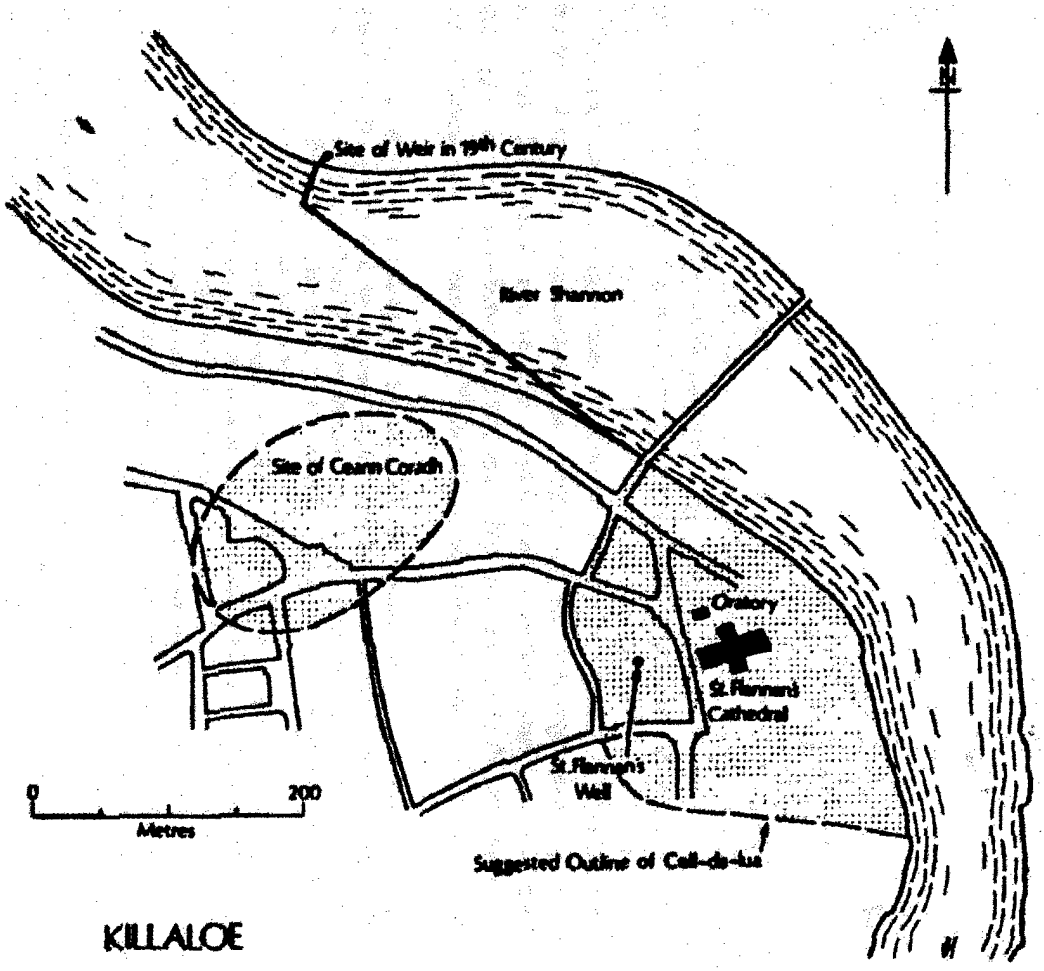
1 - Bruree
2 - Caisel
3 - Ceann Abhrad
4 - Cenn Corad
5 - Cnoc Fochuir (unlocated, somewhere north of Limerick)
6 - Dun Iasgum / Hodie Cahir
7 - Duntry League
8 - Dungrod
9 - Dun Cliachum (unlocated, somewhere near Limerick)
10 - Inis Locha Sainglenn (unlocated, somewhere east of Limerick)
11 - Inis Gaill Duib
12 - Loch Cé
13 - Lough Gur
14 - Rossium Regum
15 - Tuaim Greni

[1] The forts built by Brian Boru are listed in Geoffrey Keating, The History of Ireland, vol. III, ed. And trans. By Patrick S. Dinneen (London: Irish Texts Society, 1908), page 263. Those sites listed as unlocated have not yet been identified on the ground and as such, I did not attempt to guess, choosing instead to leave them off the map but noting that the king of Dál Cais did build more fortifications than are shown on the map.

Appendix A: Map of Brian Bóru's Fortifications



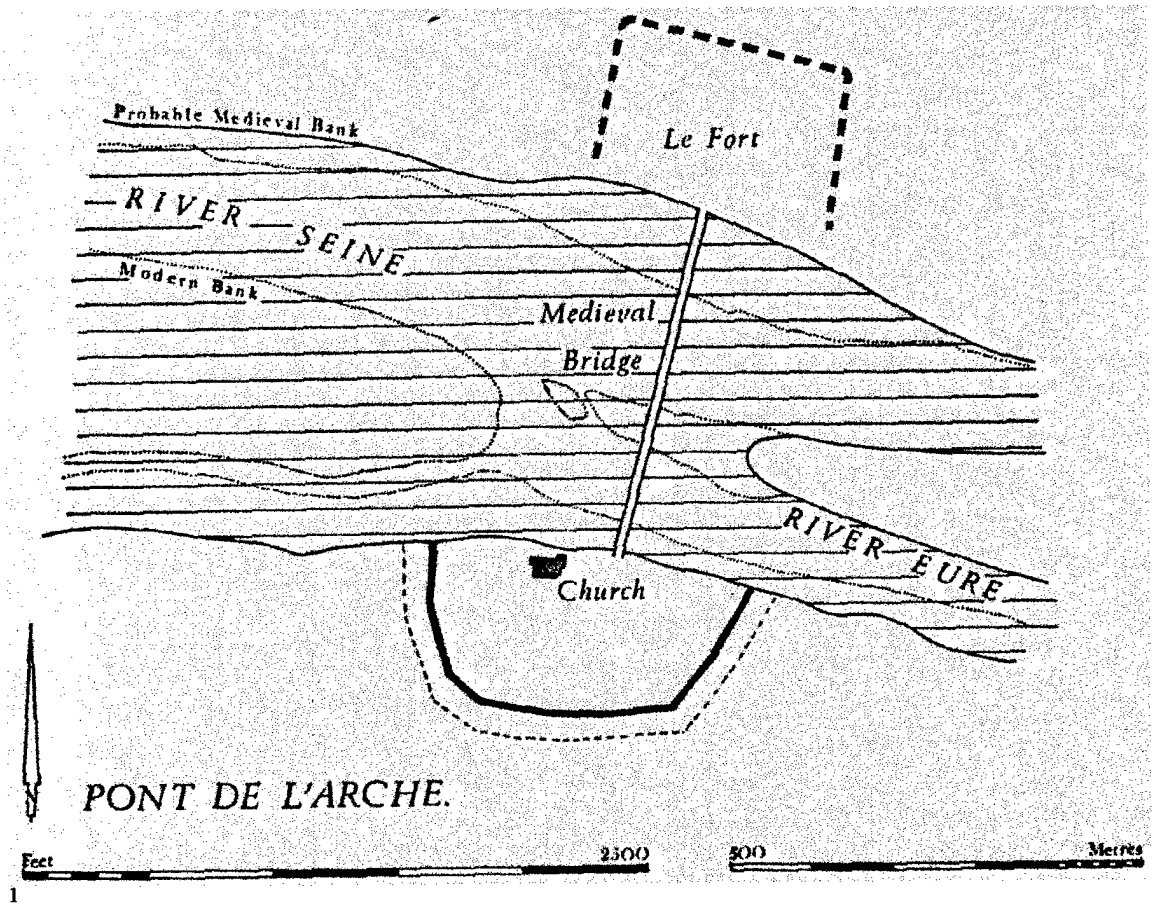
Appendix B: Map of the Site at Killaloe



[1]

[1] Map is from John Bradley, "Killaloe: A Pre-Norman Borough?" in *Peritia* 8 (1994), page 170.

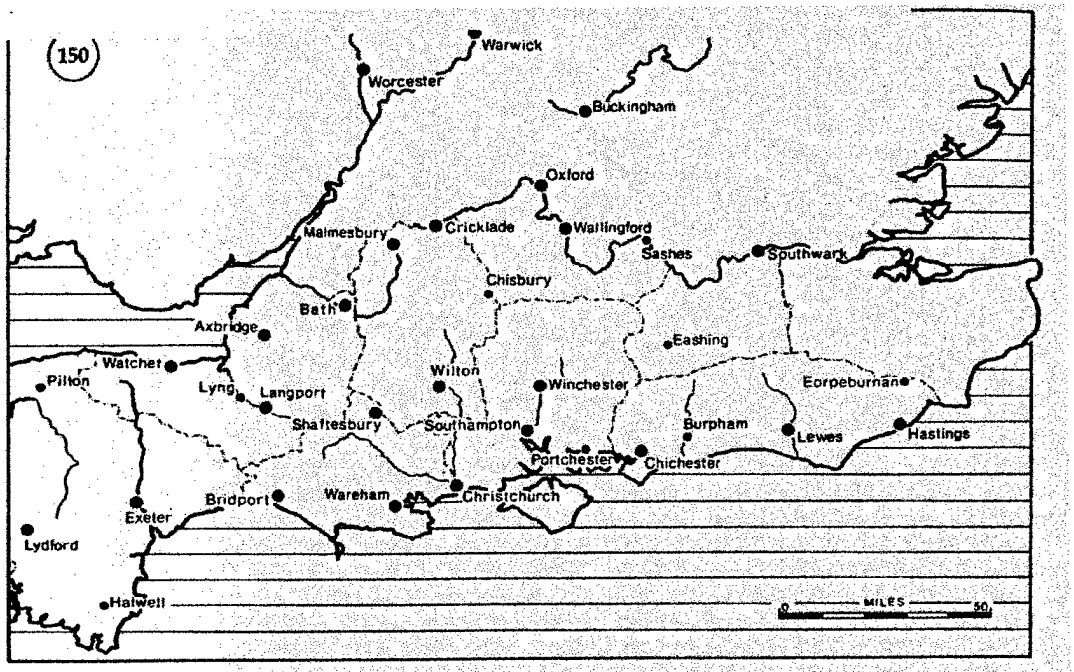
Appendix C: Map of Charles the Bald's Bridge Site at Pont de l'Arche

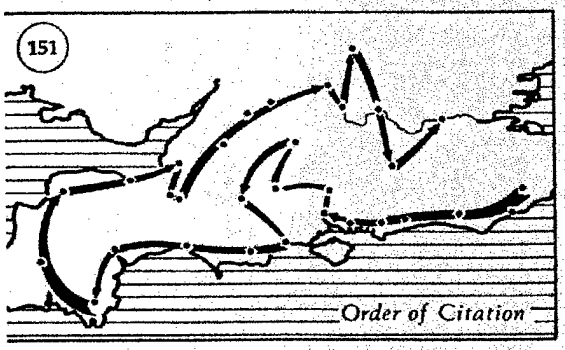


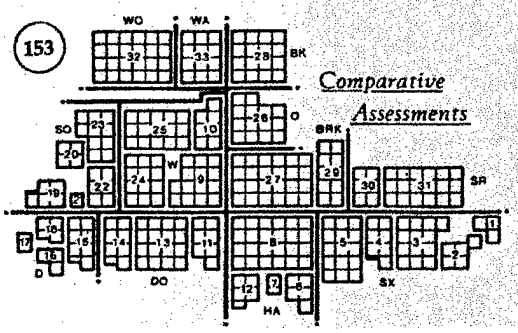
[1]

[1] Map is from J.M. Hassall and David Hill, "Pont de l'Arche: Frankish Influence on the West Saxon Burh?" in *The Archaeological Journal* 127 (1970), page 193.

Appendix D: Map of the Defenses of Wessex from the Burghal Hidage







152

		ASSESSMENT (HIDES)	EQUIVALENT (FEET)
1	EORPEBURNAN	324	1336
2	HASTINGS	500	2062
3	LEWES	1300	5362
4	BURPHAM	720	2972
5	CHICHESTER	1500	6187
6	PORTCHESTER	500	2062
7	SOUTHAMPTON	150	618
8	WINCHESTER	2400	9900
9	WILTON	1400	5775
10	CHISBURY	700	2887
11	SHAFTESBURY	700	2887
12	CHRISTCHURCH	470	1938
13	WAREHAM	1600	6600
14	BRIDPORT	760	3135
15	EXETER	734	3028
16	HALWELL	300	1237
17	LYDFORD	140	577
18	PILTON	360	1485
19	WATCHET	513	2116
20	AXBRIDGE	400	1650
21	LYNG	100	412
22	LANGPORT	600	2475
23	BATH	1000	4125
24	MALMESBURY	1200	4950
25	CRICKLADE	1500	6187
26	OXFORD	1400	5775
27	WALLINGFORD	2400	9900
28	BUCKINGHAM	1600	6600
29	SASHES	1000	4125
30	EASHING	600	2475
31	SOUTHWARK	1800	7425
	TOTAL FOR WESSEX	27,070	
32	WORCESTER	1200	4950
33	WARWICK	2400	9900

Bibliography

Primary Sources:

Adomnan. *Adomnan's Life of Columba.* Translated and Edited by Alan Orr Anderson and Ogilvie Anderson. London: Thomas Nelson and Sons Ltd., 1961.

The Anglo-Saxon Chronicle. Translated and Edited by Michael Swanton. New York: Routledge, 1998.

The Annals of the Kingdom of Ireland by the Four Masters. Translated and Edited by John O'Donovan. Dublin: Hodges, Smith, and Co., 1856.

The Annals of Inisfallen. Translated and Edited by Sean Mac Airt. Dublin: The Dublin Institute for Advanced Studies, 1951.

Annals of Loch Cé. Translated and Edited by William Hennessy. London: Longman & Co., 1871.

The Annals of St-Bertin. Translated and Edited by Janet L. Nelson. Manchester: Manchester University Press, 1991.

Annals of Ulster. Translated and Edited by William M. Hennessy. Dublin: Alexander Thom and Co., 1887.

Asser. *Life of King Alfred.* Translated and Edited by Simon Keynes and Michael Lapidge. London: Penguin Books, 1983.

Bede. *Ecclesiastical History of the English People.* Translated by Leo Sherley-Price, Revised by R.E. Latham, Edited by D.H. Farmer. London: Penguin Books, 1990.

Cath Ruis Na Rig for Boinn. . Translated and Edited by Edmund Hogan. Dublin: Hodges Figgis & Co., 1892

The Circuit of Ireland. . Translated by John O'Donovan. Dublin: For the Irish Archaeological Society, 1841

Cogadh Gaedhil re Gallaibh. Translated and Edited by James Henthorn Todd. London: Longman's, Green, Reader, and Dyer, 1867.

Chronicum Scotorum. Translated and Edited by William M. Hennessey. London: Longmans, Green, Reader, and Dyer, 1866.

Fragmentary Annals of Ireland. Translated by Joan Radnor. Dublin: Dublin Institute for Advanced Studies, 1978.

Froissart, Jean. *Froissart: Chronicles*. Edited by Geoffrey Brereton. London: Penguin Books, 1978.

Gantz, Jeffrey. *Early Irish Myths and Sagas*. London: Penguin Books, 1981.

Gerald of Wales. *The History and Topography of Ireland*. Translated by John J. O'Meara. London: Penguin Books, 1982. Revised edition.

Keating, Geoffrey. *The History of Ireland*, Vol. III. Translated and Edited by Patrick S. Dinneen. London: Irish Texts Society, 1908.

Lebor na Cert. Translated and Edited by Myles Dillon. Dublin: Irish Texts Society, 1962

Njal's Saga. Translated and Edited by Carl F. Bayerschmidt and Lee M. Hollander. New York: New York University Press, 1955.

The Song of Dermot and the Earl. Oxford: Clarendon Press, 1892. Translated by Goddard Henry Orpen.

Stokes, Whitley, ed. *Three Irish Glossaries*. London: Williams and Norgate, 1862. Translated by Whitley Stokes.

The Book of Kells. Edited by Francoise Henry. New York: Alfred A. Knopf, 1974.

The Tain. Translated and Edited by Thomas Kinsella. London: Oxford University Press, 1970.

Táin Bó Cúailnge. Translated and Edited by Cecile O'Rahilly. Dublin: Dublin Institute for Advanced Studies, 1976.

Bibliography (continued)

Secondary Sources:

Aalen, F.H.A. *Man and the Landscape in Ireland.* London: Academic Press, 1978.

Bachrach, Bernard S. "Animals and Warfare in Early Medieval Europe." In *Armies and Politics in the Early Medieval West*, ed. Bernard Bachrach. Aldershot: Variorum, 1993.

_____. "Logistics in Pre-Crusade Europe." In *Feeding Mars*, ed. John A. Lynn. Boulder: Westview Press, 1993.

Bartlett, Thomas and Jeffery, Keith. *A Military History of Ireland.* Cambridge: Cambridge University Press, 1996.

Beeler, John H. "Castles and Strategy in Norman and Early Angevin England." *Speculum* 31 (1956): 581-601.

Berardis, Vicenzo. *Italy and Ireland in the Middle Ages.* Dublin: Clonmore and Reynolds, 1950.

Binchy, D.A. *Celtic and Anglo-Saxon Kingship.* The O'Donnell Lectures for 1967-8. Oxford: Clarendon Press, 1970.

Bloch, Marc. *Feudal Society.* London: Routledge & Kegan Paul LTD, 1961. Translated by L.A. Manyon.

Bradley, John. "Killaloe: A pre-Norman Bourough?" *Peritia* 8 (1994): 170-179.

Brooks, Nicholas P. "The Administrative Background to the Burghal Hidage." In *The Defence of Wessex: The Burghal Hidage and Anglo-Saxon Fortification*, ed. David Hill and Alexander R. Rumble. Manchester: Manchester University Press, 1996.

Bokonyi, Sándor. "The Development of Stockbreeding and Herding in Medieval Europe." In *Agriculture in the Middle Ages*, ed. Del Sweeney. Philadelphia: University of Pennsylvania Press, 1995.

Charles-Edwards, T.M. "Irish Warfare before 1100." In *A Military History of Ireland*, ed. Thomas Bartlett and Keith Jeffery, 26-51. Cambridge: Cambridge University Press, 1996.

Coupland, Simon. "The Fortified Bridges of Charles the Bald." *Journal of Medieval History* 17 (1991).

Dillon, Myles. *Early Irish Literature*. Chicago: The University of Chicago Press, 1948.

Dinneen, Patrick S. *Foclóir Gaedhige agus Béarla*. Dublin: Irish Texts Society, 1927.

Doherty, Charles. "Some Aspects of Hagiography as a Source for Irish Economic History," in *Peritia* 1 (1982).

Duffy, Seán. *Ireland in the Middle Ages*. New York: St. Martin's Press, 1997.

Edwards, Nancy. *The Archaeology of Early Medieval Ireland*. London: B.T. Batsfords Ltd, 1990.

Edwards, Ruth Dudley. *An Atlas of Irish History*. London: Metheun & Co., 1973.

Engels, Donald W. *Alexander the Great and the Logistics of the Macedonian Army*. Berkely: University of California Press, 1978.

FM 21-20. Washington: Department of the Army, 1992.

Food Composition and Nutrition Tables 1986/87. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1986. 3rd edition.

Gillmor, Carroll. "The Logistics of Fortified Bridge Building on the Seine under Charles the Bald." In *Anglo-Norman Studies*, vol. 11, ed. R. Allen Brown. Woodbridge: The Boydell Press, 1989.

Grabowski, Kathryn and David Dumville. *Chronicles and Annals of Medieval Ireland and Wales*. Woodbridge: The Boydell Press, 1984.

Green, Alice Stopford. *History of the Irish State to 1014*. London: MacMillan and Co., 1925.

Griffith, Paddy. *The Viking Art of War*. London: Greenhill Books, 1995.

Hammond, J., J.C. Bowman, and T.J. Robinson. *Hammond's Farm Animals*, 5th ed. London: Edward Arnold Ltd, 1983.

Harbison, Peter, Homan Potterton, and Jeanne Sheeny. *Irish Art and Architecture*. London: Thames and Hudson, 1978.

Hassall, J.M. and David Hill. "Pont de l'Arche: Frankish Influence on the West Saxon Burh?" *The Archaeological Journal* 127 (1970).

Hill, David and Alexander R. Rumble, eds. *The Defense of Wessex: The Burghal Hidage and Anglo-Saxon Fortification*. Manchester: Manchester University Press, 1996.

Hogan, Edmund. *Onomasticon Goedelicum Locorum et Tribuum Hiberniae et Scotiae.* Dublin: Four Courts Press, 1910.

Hughes, Kathleen. *The Church in Early Irish Society.* Ithaca: Cornell University Press, 1966.

_____. *Early Christian Ireland: Introduction to the Sources.* Ithaca: Cornell University Press, 1972.

Hyde, Douglas. *A Literary History of Ireland.* New edition with introduction by Brian O'Cuiv. New York: St. Martin's Press, 1980.

Jackson, Kenneth. *The Oldest Irish Tradition: A Window on the Iron Age.* Cambridge: Cambridge University Press, 1964.

Jaski, Bart. "The Vikings and the Kingship of Tara." *Peritia* 9 (1995): 310-353.

Kelleher, John V. "The Rise of the Dál Cais," in *North Munster Studies*, Ed. Etienne Rynne, 230-241. Limerick: The Thomond Archaeological Society, 1967.

Kelly, Fergus. *Early Irish Farming.* Louth: Dublin Institute for Advanced Studies, 1997.

Kelly, Patricia. "The Tain as Literature." *In Aspects of the Tain*, ed. J.P. Mallory. Belfast: December Publications, 1992.

Kenney, James F. *The Sources for the Early History of Ireland: Ecclesiastical.* New York: Octagon Books, Inc., 1966.

Leahy, A.H., ed. *Heroic Romances of Ireland.* London: David Nutt, 1906.

Lehmann, Ruth P. and W.P. Lehmann. *An Introduction to Old Irish.* New York: The Modern Language Association of America, 1975; paperback reprint 1996.

Leighton, Albert C. *Transport and Communication in Early Medieval Europe AD500-1100.* New York: Barnes & Noble Inc., 1972.

Lucas, A.T. *Cattle in Ancient Ireland.* Kilkenny: Boethius Press, 1989.

Lynn, John A., ed. *Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present.* Boulder: Westview Press, 1993.

Macalister, R.A.S. *Tara: A Pagan Sanctuary of Ancient Ireland.* New York: Charles Scribner's Sons, 1931.

Marenbon, John. "Wulfad, Charles the Bald and John Scottus Eriugena." *In Charles the Bald: Court and Kingdom*, ed. Margaret Gibson and Janet Nelson. Oxford: BAR International Series 101, 1981.

McCormick, Finbar. "Dairying and Beef Production in Early Christian Ireland: The Faunal Evidence" in *Landscape Archaeology in Ireland*. Oxford: BAR British Series 116, 1983. Edited by Terence Reeves-Smyth and Fred Hammond.

_____. "Stockrearing in Early Christian Ireland." Ph.D. Dissertation, Queen's University of Belfast, 1987.

McKitterick, Rosamund. "Charles the Bald & the Image of Kingship." *History Today* 38, no. 6 (1988).

Mercer, Roger, ed. *Farming Practice in British Prehistory*. Edinburgh: University Press, 1981.

Meyer, Kuno. *The Death-Tales of the Ulster Heroes*. Dublin: Hodges, Figgis, & Co., 1906. As part of the Royal Irish Academy Todd Lecture Series, Volume XIV.

Mitchell, G. Frank and Michael Ryan. *Reading the Irish Landscape*. Dublin: Town House and Country House, 1997.

Moody, T.W., F.X. Martin, and F.J. Byrne, ed. *A New History of Ireland*. Vol. VIII, *A Chronology of Irish History to 1976*. Oxford: Clarendon Press, 1982.

_____. *A New History of Ireland*. Vol. IX, *Maps, Genealogies, Lists*. Oxford: Clarendon Press, 1984.

Morillo, Stephen. *Warfare under the Anglo-Norman Kings 1066-1135*. Woodbridge: The Boydell Press, 1994.

Nelson, Janet L. "A Tale of Two Princes: Politics, Text and Ideology in a Caroligian Annal." In *Studies in Medieval and Renaissance History*, vol 10, ed. J.A.S. Evans and R.W. Unger. New York: AMS Press, 1988.

_____. *Charles the Bald*. London: Longman Group, 1992.

Nutt, Alfred. *The Critical Study of Gaelic Literature*. New York: Burt Franklin, 1904.

O'Brien, Jacqueline and Peter Harbison. *Ancient Ireland from Prehistory to the Middle Ages*. New York: Oxford University Press, 1996.

O'Cróinín, Dáibhí. *Early Medieval Ireland 400-1200*. London: Longman Group Limited, 1995.

O'hUiginn, Ruairi. "The Background and Development of Tain Bo Cuailnge." In *Aspects of the Tain*, ed. J.P. Mallory. Belfast: December Publications, 1992.

O'Lochlainn, Colm. "Roadways in Ancient Ireland," *in Feil-sgribhinn Eoin Mhic Neill: Essays and Studies Presented to Professor Eoin Mac Neill*, ed. John Ryan. Dublin: At the Sign of the Three Candles, 1940.

O'Rahilly, Thomas F. *Early Irish History and Mythology*. Dublin: The Dublin Institute for Advanced Studies, 1946.

O'Riordain, Sean P. *Antiquities of the Irish Countryside*. London: Methuen & Co. Ltd., 1942.

Parker, Geoffrey. *The Military Revolution*, 2d ed. Cambridge: Cambridge University Press, 1996.

Perjes, Gustav. "Army Provisioning, Logistics and Strategy in the Second Half of the 17th Century. *Acta Historica* XVI (1970).

Prestwich, Michael. *Armies and Warfare in the Middle Ages*. New Haven: Yale University Press, 1996.

Raftery, Barry. *Trackways through Time: Archaeological Investigations on Irish Bog Roads, 1985-1989*. Rush: Headline Publishing, 1990.

Richter, Michael. *Medieval Ireland: The Enduring Tradition*. Houndmills: MacMillan Education Ltd., 1988.

Sadowska, Ewa. "The Military Nature of the Raiding Campaign in Tain Bo Cuailnge." In *Ulidia*, ed. J.P. Mallory and Gerard Stockman. Belfast: December Publications, 1994.

Skeel, Caroline A.J. *Travel in the First Century After Christ*. Cambridge: Cambridge University Press, 1901.

Support Operations Course (Phase I): Lesson Book. Fort Lee: United States Army Logistics Management College, 1993.

Trow-Smith, Robert. *A History of British Livestock Husbandry to 1700*. London: Routledge and Kegan Paul, 1957.

Valante, Mary A. "Reassessing the Irish 'Monastic Town,'" in *Irish Historical Studies* (1997).

Van Creveld, Martin. *Supplying War*. Cambridge: Cambridge University Press, 1977; paperback edition 1986.

Walsh, A. *Scandinavian Relations with Ireland During the Viking Period.* Dublin: The Talbot Press Limited, 1922.

Waterman, Dudley M. *Excavations at Navan Fort 1961-71*. Completed and edited by C.J. Lynn. Northern Ireland Archaeological Monographs, ed. Ann Hamlin, No. 3. Belfast: The Stationary Office, 1997.

Watkins, Alfred. *The Old Straight Track*, 4th ed. London: Methuen & Co. Ltd., 1948.

White, Lynn. *Medieval Technology and Social Change*. London: Oxford University Press, 1962.

☒ DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED

☐ DISTRIBUTION STATEMENT B:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES ONLY; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT C:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND THEIR CONTRACTORS; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT D:
DISTRIBUTION AUTHORIZED TO DoD AND U.S. DoD CONTRACTORS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT E:
DISTRIBUTION AUTHORIZED TO DoD COMPONENTS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT F:
FURTHER DISSEMINATION ONLY AS DIRECTED BY (Indicate Controlling DoD Office and Date) or HIGHER DoD AUTHORITY.

☐ DISTRIBUTION STATEMENT X:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND PRIVATE INDIVIDUALS OR ENTERPRISES ELIGIBLE TO OBTAIN EXPORT-CONTROLLED TECHNICAL DATA IN ACCORDANCE WITH DoD DIRECTIVE 5230.25, WITHHOLDING OF UNCLASSIFIED TECHNICAL DATA FROM PUBLIC DISCLOSURE, 6 Nov 1984 (Indicate date of determination). CONTROLLING DoD OFFICE IS (Indicate Controlling DoD Office).

☐ This document was previously forwarded to DTIC on _____ (date) and the AD number is _____.

☐ In accordance with provisions of DoD instructions, the document requested is not supplied because:

☐ It will be published at a later date. (Enter approximate date, if known).

☐ Other. (Give Reason)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly above. Technical Documents must be assigned distribution statements.

DAVID B BEOUGHER
Print or Type Name

David B. Beougher / 16 May 99
Authorized Signature/Date

(814) 861-6981
Telephone Number